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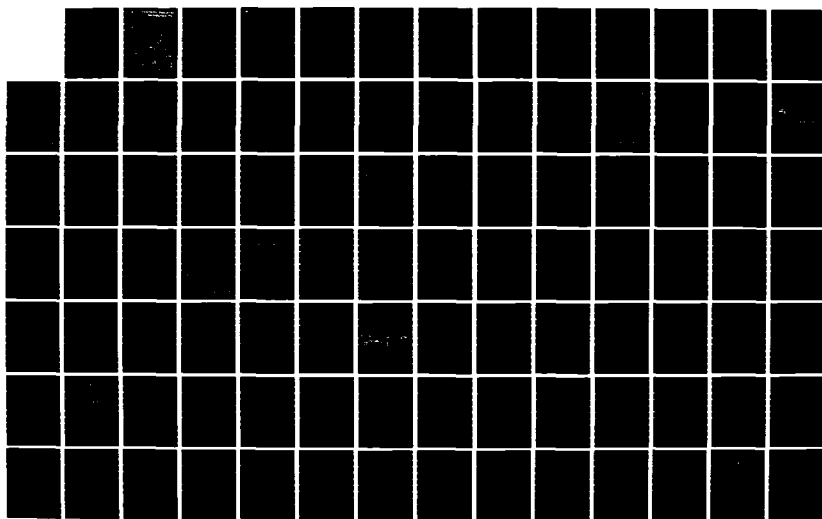
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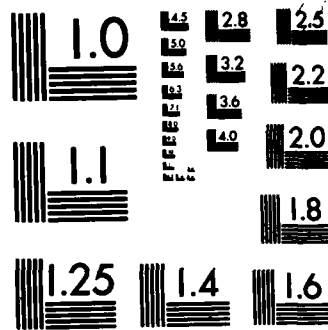
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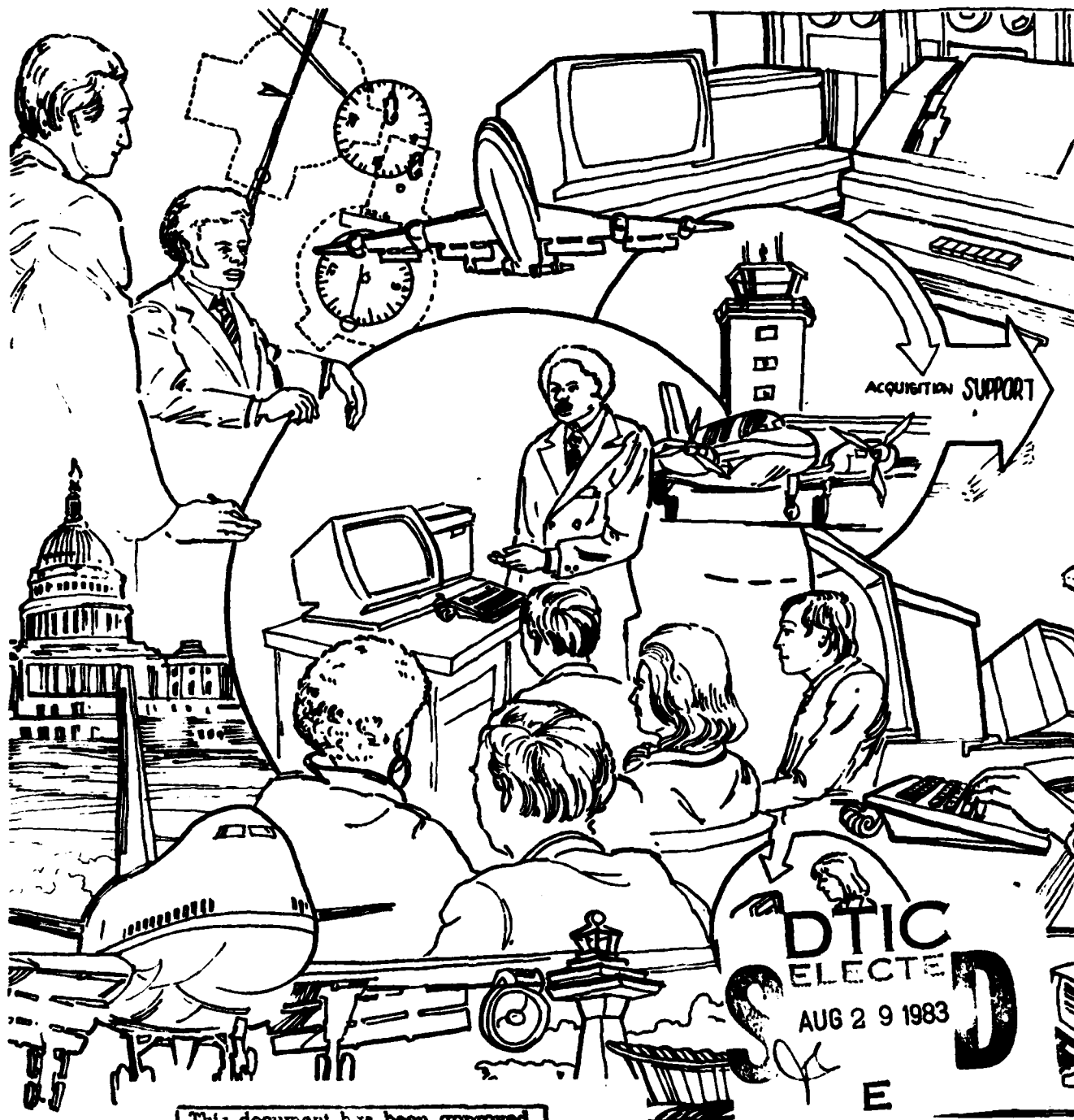


U.S. Department
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Federal Aviation
Administration

Information Resources Management Plan

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16. Abstract <p>This Plan documents the Federal Aviation Administration's long-term plan for applying systems analysis and automated data processing technology to its information needs. As a long-range Plan, it provides a sound basis for both the Executive and Legislative Branches to properly appraise funding needs. It retains the flexibility needed to accommodate future technology as it becomes applicable to individual subsystems and it becomes evident that the new technology will improve our return on investment.</p> <p>The Plan is the result of an intensive, year-long effort drawing on the talents and expertise of a wide variety of people. In addition to agency personnel, the FAA drew on the expertise and talents of a multitude of individuals from nearly a hundred different corporations, unions, associations, universities, and governments.</p> <p>The Plan begins institutionalizing a process of regular and comprehensive assessments of FAA's information posture and needs. This Plan is the framework for the development, operation, and management of agency information resources and for the regular review of performance as well as resource and priority decisions. The FAA will follow through on this planning effort with the detailed requirements documentation, system specifications, cost benefit analyses, and the other actions sound system management requires.</p>			
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This Information Resources Management Plan documents the Federal Aviation Administration's long term plan for applying systems analysis and automated data processing technology to its information needs. As a long-range plan it provides a sound basis for both the Executive and Legislative Branches to properly appraise funding needs. It retains the flexibility needed to accommodate future technology as it becomes applicable to individual subsystems and it becomes evident that the new technology will improve our return on investment.

The plan is the result of an intensive, year-long work effort drawing on the talents and expertise of a wide variety of people. Work groups representing every level of the FAA, field and Headquarters, managers and specialists, identified requirements and problems and assessed alternative strategies in each of the information areas. In addition, we went outside the agency to draw on business, academic and governmental experience. We consulted a multitude of individuals from nearly a hundred different corporations, unions, associations, universities, and governments. Through these contacts, we obtained ideas for improving our operations and examined system solutions for helping us with our problems.

Each work group assessed the information needs and identified potential solutions. Each group weighed the returns on investment offered by the alternatives and then presented their plans, proposals, and priorities to the agency's top managers meeting under my chairmanship. After management review and deliberation, the plans were modified and adapted into the overall information resource management plan of the FAA.

Through the application of systems analysis and participative management techniques we have created a framework for systems integration without sacrificing our concern for the people who must make it work. The plan recognizes the interdependencies and interfaces that must be the subject of careful subsystem design and implementation. It also recognizes that future administrative activities will dramatically increase the number of employees interacting with machine systems. Woven through the plan are provisions for giving employees the tools they need to increase their capabilities and for the requisite orientation and training.

The plan begins institutionalizing a process of regular and comprehensive assessments of FAA's information posture and needs. This plan is the framework for the development, operation, and management of agency information resources and for the regular review of performance as well as resource and priority decisions.

FAA will need to follow through on this planning effort with the detailed requirements documentation, system specifications, cost benefit analyses, and the other actions sound system management requires. In these actions, the responsible organization will need to repeat the process of involving affected levels of the agency. Also, FAA will need to supplement these reviews with periodic assessments of technological tradeoffs and the validity of FAA's direction in the light of new technology. These processes, which will emphasize measurement of return on investment and total agency needs, will continue to reap savings of dollars and time in future years.

As the action executive for the Federal Aviation Administration, I accept full responsibility for the initiation, methodology, systems analysis, review procedures, and results of this study and the program to be instituted.



J. Lynn Helms
Administrator

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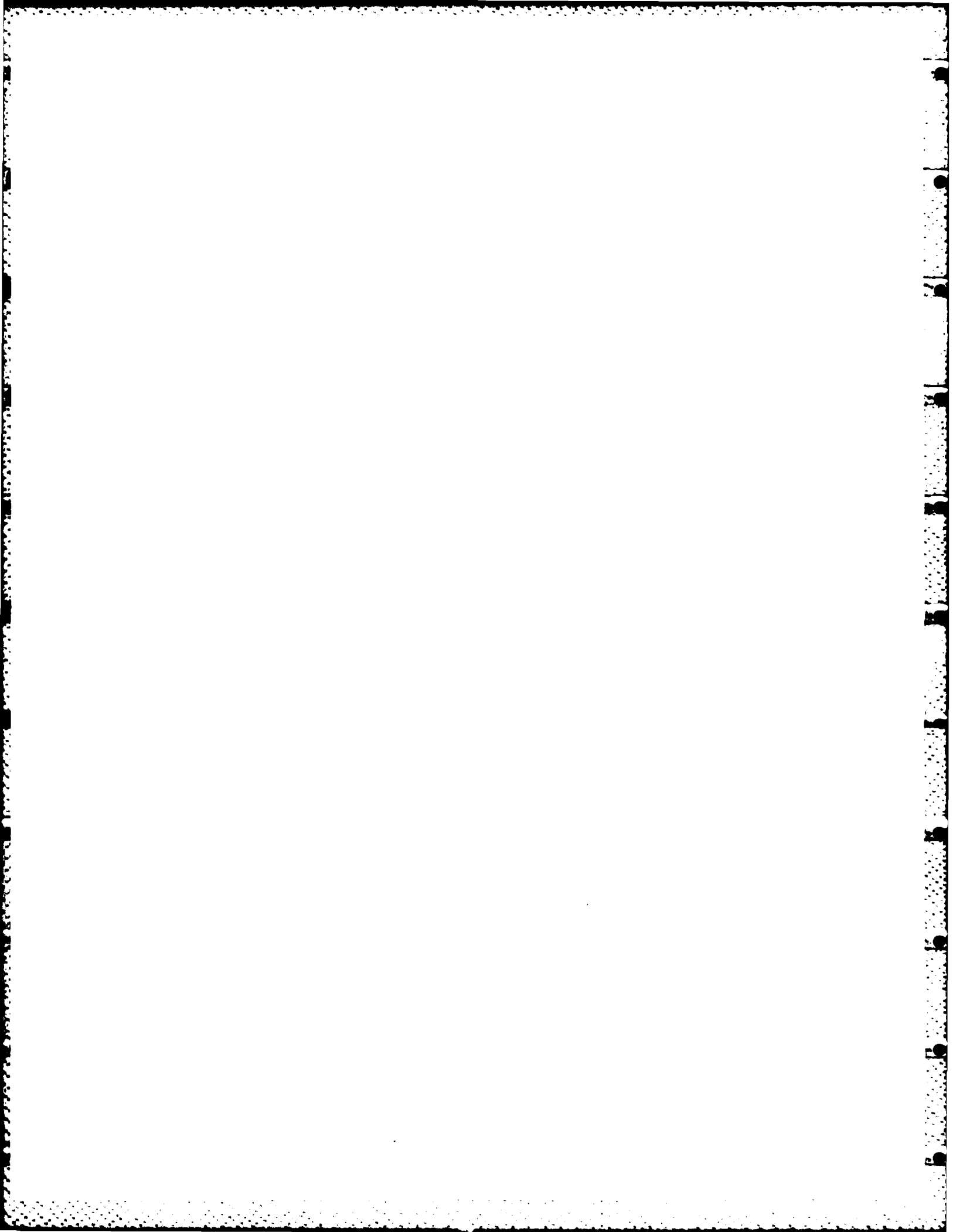
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1

Introduction and Executive Summary

Chapter 1. INTRODUCTION AND EXECUTIVE SUMMARY

Section 1. INTRODUCTION

101. GOALS OF THE PLANNING PROCESS

The planning process was undertaken so that the Federal Aviation Administration (FAA) and its management will have the opportunity to:

- a. consciously review needs and opportunities to improve agency operations through the application of information and systems technology,
- b. deliberately choose future directions and alternative management strategies in moving to achieve FAA goals and objectives,
- c. review priorities given to information systems and activities to more closely conform them to on-going agency mission priorities and activities,
- d. obtain active participation of all levels of the agency in the identification of needs and improvement opportunities, and
- e. look beyond immediate actions to evaluate the longer term costs and benefits.

102. BACKGROUND

The Information Resources Management Plan is the result of the Administrator's initiative to launch a high priority planning process. It was anticipated that such a plan would demonstrate that government services can plan their future just as other functional organizations do and can establish detailed plans, which if not set, will cause the public to reject the efforts of both the Executive and Legislative branches. In addition, such a plan will achieve the goals identified above and permit FAA to:

- a. meet certain requirements of the Paperwork Reduction Act and
- b. engage in more orderly discussions with Congress, the General Accounting Office, the Office of Management and Budget, the General Services Administration, and other oversight organizations.

103. MANAGEMENT ROLE OF THE PLAN

The approved Information Resources Management Plan constitutes:

- a. a charter and a commitment to institute and complete the projects and activities spelled out in the succeeding pages,

- b. the basis for budgeting and adjusting budgets as they relate to information systems,

- c. a standard for the accountability of project performance and cost tracking, and

- d. in response to the Administrator's commitment to act on the "Jones Committee" report, a method to include and inform the entire FAA in the planning process and in shaping FAA's plans for the future.

104. APPROACH USED

The Information Resources Management Planning Team developed a simplified planning process aimed at broad participation and timely constructive action.

- a. Information needs and interests were solicited from all levels and programs of the agency in a simplified form.

- b. Work groups, representing a wide variety of agency elements, were brought together to review the results of the surveyed information requirements and to bring their special knowledge and expertise to bear on each specific information area. Appendix 1 identifies work group participants.

- c. Work group participants consulted a cross section of experts in private industry and in other government agencies to learn from their experience. Appendix 2 lists the consulted organizations.

- d. Work groups developed an analysis of existing deficiencies, problems, and opportunities for improvement and, in response to this analysis, they derived a series of projects and project plans.

- e. Automated data processing (ADP) resource managers, with technical support, examined project plans to determine the best overall hardware/communications configuration to support the information system plans.

- f. These analyses and project plans, associated costs and benefits, and schedules were presented in substantial detail to a management steering committee chaired by the Administrator and composed of the Deputy Administrator, the Associate Administrators, the Director of the Air Traffic Service, the Director of the Office of Management Systems, and three directors that represented the regions and centers. The manage-

ment steering committee members are listed in Appendix 1.

105. PLANNING ASSUMPTIONS

The key planning assumptions which underpin the contents of this plan were:

- a. Federal Aviation Administration operating resources will stay constant or decline in constant FY 1982 dollar terms.
- b. Federal Aviation Administration personnel ceilings will drop steadily throughout the planning period.
- c. There will be a steadily decreasing need for the present number of manned facilities and field offices conducting FAA business.
- d. Unit personnel costs will tend to climb while unit ADP hardware costs will drop steadily.
- e. Professional in-house ADP personnel resources will continue to decline so users will have to assume greater responsibility for software development and modification with their own or contractual personnel.

f. ADP technology in the form of increasingly user-friendly and varied software and low cost equipment will cause a steadily increasing dispersion of ADP expertise and capability throughout FAA.

g. Increasingly large portions of central processing resources will need to be devoted to the increasingly sophisticated software needed by both users and information managers.

h. The new culture of the private citizenry demands reductions in the cost of all elements of government, whether they are administrative, legislative, or judicial costs.

106. THE RELATIONSHIPS OF THE PLAN TO AGENCY MISSIONS

The effective integration of information systems into on-going operations requires careful planning, with clearly defined responsibilities and clear identification of their relationships to agency missions and objectives. The following illustrates the broad functional relationship between the agency's missions and each of the information areas.

Missions	Information Areas									
	Airports Information Requirements	Air Traffic Control (ATC) and Airspace Information Requirements	Aviation Activity Information Requirements	Aviation Safety Analysis System (ASAS) Information Requirements	Financial Resources Information Requirements	Human Resources Information Requirements	Material Resources Information Requirements	National Airspace System (NAS) Facilities Information Requirements	Office Automation and Management Support	
Promotion of Aviation Safety	X	X	X	X				X		
Efficient Utilization of Airspace	X	X	X					X		
Promotion of Air Commerce and Aviation at Home and Abroad	X		X	X						
Fulfillment of National Defense Requirements		X						X		
Efficient and Economical Program Administration					X	X	X		X	

FIGURE 1.1 RELATIONSHIPS OF AGENCY MISSIONS AND INFORMATION AREAS

107. AGENCY OBJECTIVES

Agency objectives place special emphasis and priority on certain mission and program accomplishments in recognition of current needs. Again, as with agency missions, each of the current agency objectives can be identified with broad information areas. More impor-

tantly, however, each of the information projects within these areas can be identified with one or more agency objectives. The project summaries in the later chapters of this plan correlate projects with agency objectives. The relationships of agency objectives to the information areas in general are shown below.

Agency Objectives for FY 1983	Information Areas								
	Airport Information Requirements	Air Traffic Control (ATC) and Airspace Information Requirements	Aviation Activity Information Requirements	Aviation Safety Analysis System (ASAS) Information Requirements	Physical Planning Information Requirements	Human Resources Information Requirements	Medical Resources Information Requirements	Aviation Airports System (PAS) Facilities Information Requirements	Other Aviation and Management Support
1. Maintain or Improve Current Levels of U.S. Aviation Safety	X	X	X	X		X	X	X	
2. Prepare and Implement Programs in Support of the Agency's Human Relations Policy						X			
3. Continue the FAA's Long Range Planning Program	X		X					X	X
4. Complete Implementation of the Management Organization and Establish the Systems and Procedures Needed to Assure Efficient Allocation of Human and Fiscal Resources		X	X	X	X	X	X	X	X
5. Aggressively Pursue Opportunities to Reduce, Eliminate, or Otherwise Improve the Agency's Regulatory Burden	X	X	X	X					
6. Improve FAA's Preeminence as the World Aviation Authority				X					
7. Continue and Expand the Agency Program for Employment and Advancement of Handicapped, Minorities, and Women Employees						X			
8. Provide All Services of the FAA, Excluding the Airways Modernization Program, at a Cost Not Greater than the 1980 FAA Budget, Adjusted for Inflation	X	X	X	X	X	X	X	X	X

FIGURE 1.2 RELATIONSHIPS OF AGENCY OBJECTIVES AND INFORMATION AREAS

Section 2. EXECUTIVE SUMMARY

100. FUNCTIONAL HIGHLIGHTS OF THE PLAN

The functional information system actions that will result from implementing the plan are briefly described in the following subsections. Figure 1.3 at the end of this chapter shows the relationships of the individual plans as they evolve over time.

a. Airports Information Requirements. The Airports Information plan calls for the following:

- A set of integrated data systems will be implemented to provide more current and accurate information.
- The basic concepts of the plan are that source data entry and edit will be established for all systems and that individual system files will be linked to eliminate duplicate data.
- The Headquarters Grants Management System and the National Plan for Integrated Airports Systems will move from commercial to in-house computers to interface with other agency systems.
- The Regional Grants Management System will establish the basis for an integrated, distributed Airports Information System.

b. Air Traffic Control (ATC) and Airspace Information Requirements. The key points in this plan are:

- All aeronautical information subsystems in the National Flight Data Center will be integrated.
- There will be a centralized data base for Air Traffic Control Procedures and Separation Standards.
- The planned systems will contribute to the standardization and uniform application of Air Traffic operation and management data.
- The majority of manual tasks involved with obstruction evaluations of proposed construction and airport airspace analysis of landing area proposals and nonfederal navigational aid proposals will be eliminated.
- The planned systems will automate the process of producing Instrument Flight Procedures, enlarge the flight inspection data base, incorporate a scheduling record for instrument approach procedure reviews, and provide better summaries of aircraft program costs.

c. Aviation Activity Information Requirements. The highlights of this area's plan are:

- A single focus for managing Aviation Activity Information will be provided.
- Single statistical systems for the activity and environment area and the agency operations area will be established to replace the proliferation of systems that currently exist.
- Statistical information requirements will be identified and evaluated in a systematic manner through user group activities.

d. Aviation Safety Analysis System (ASAS) Information Requirements. This plan calls for the development and implementation of a cost-effective, integrated, comprehensive, automated certification and safety information system.

The system will:

- Provide the capability of satisfying information needs to meet the growth in aviation contained in National Aviation System (NAS) forecasts.
- Provide data support to identify potential safety issues.
- Furnish management information to enhance employee utilization and productivity.
- Provide the capability to respond more efficiently to internal and external information requests.
- Provide timely and accurate information which is easily accessible to users.

e. Financial Resources Information Requirements. The following will result from implementation of this plan:

- Much of the agency's financial activity will be recorded directly by program organizations, and the format and timing of information output will be determined by the user.
- The budget formulation, allocation, tracking, and revision processes will be automated.
- The timeliness of the payment and the accounting of personnel compensation and benefits will be improved through integration with other systems and the expanded use of direct data entry.
- The Uniform Accounting System (UAS) will be expanded and improved to provide financial information to all management levels on a daily basis.
- A broad-based cost accounting and productivity measurement system will be installed.

f. Human Resources Information Requirements. The key elements of the Human Resources Information plan are:

- Requests for personnel action will be entered into the system at source level.
- Manual checks of budget and classification data files will be replaced by automated edits.
- An automated system will be installed to track the discrimination complaint stages.
- A Loss Management Information System will be implemented to provide better use of the information needed to control and reduce the agency's costs of accidents, injuries, and illnesses.
- Labor relations specialists will be better able to track and report on unfair labor practices, contract and agency grievances, adverse actions, and union bargaining unit activity.

g. Materiel Resources Information Requirements. The highlights of the Materiel Resources plan are as follows:

- A centralized inventory management system will be established at the FAA Depot to provide online access to materiel information users.
- The present Personal Property System will be enhanced to improve the management, control, and accountability of the agency's in-use personal property.
- The plan calls for the development of an automated system to report, track, control, and account for excess personal property until disposal has been made.
- An agencywide Procurement Management System and Real Property Management System will be developed and implemented.

h. National Airspace System (NAS) Facilities Information Requirements. This plan calls for the implementation of a single NAS Facilities Information System with three major systems operating under it. These systems will be:

- The Maintenance Management System (MMS) will provide information to improve the cost-effectiveness of maintenance of NAS services, facilities, and equipment.
- The Program Management System (PMS) will provide data to improve the efficient allocation of human, fiscal, and facility resources.
- The Telecommunications Management System (TMS) will provide the information necessary to plan, acquire, and manage the leased communications lines and equipment required by the NAS in a more efficient manner.

i. Office Automation and Management Support. The summary points in this chapter are:

- The Office Automation and Management Support plan provides for the extension of office technology and management support and the development of computer assisted graphics systems that will provide each manager with tools necessary to improve personal and organizational productivity and effectiveness.

- As a result of this plan, future acquisitions of equipment, software, and communications will be analyzed and distributed based on a national perspective.

j. Information Processing and Support. The information systems described in this IRMP require an ADP support posture that can produce information whenever and wherever it is needed and do so in an effective and economical manner. This chapter outlines the following plan:

- The status quo of the present three element posture (centralized, regionally distributed, and user terminal) will be maintained until 1990.
- The status quo posture will be replaced with a two element posture (centralized and user microprocessor), which will be phased in by 1991 and the present equipment released.
- This new ADP posture, which is expected to last well beyond the year 2000, will provide considerable data processing capability at the user level and also provide information storage with agencywide access at designated centralized sites.
- Starting about 1990, a program will begin that will replace the microprocessors and their supporting equipment with newer models because of physical, economical, and technical attrition.

k. Human Interface and Training. It is anticipated that virtually every FAA employee will be working with a computer or with related automation equipment in the next 10 years. The ability to use these devices will be an important element in each employee's continued productivity.

- This chapter discusses FAA's management challenge to guide and to motivate personnel through this major automation transition.
- The key elements in accomplishing this transition are to keep people informed of changes that are coming, to show them how they can benefit from these changes, and to let them know how they can prepare themselves to fully participate in the future work environment. This chapter outlines various types of automation training.

100. COSTS/BENEFITS OF THE PLAN

The tables below summarize the estimated costs and benefits for developing and implementing all the projects presented in this plan.

TABLE 1.1 SUMMARY OF COSTS
Cumulative Discounted Dollar Costs in Millions

	Thru 1985	Thru 1990	Thru 2000
Airports	1.5	1.9	2.1
Air Traffic Control & Airspace	3.4	4.7	4.7
Aviation Activity	4.4	6.5	6.5
Aviation Safety	26.8	32.6	32.6
Financial Resources	14.3	20.4	21.4
Human Resources	0.8	3.7	3.7
Materiel Resources	8.7	12.5	12.6
NAS Facilities	12.1	14.6	14.6
Office Automation & Management Support	15.4	23.1	24.1
Information Processing & Support	36.0	108.9	194.0
Human Interface & Training	2.1	5.3	7.9
Total Costs	125.5	234.2	324.2

TABLE 1.2 SUMMARY OF SAVINGS
Cumulative Discounted Dollar Savings in Millions

	Thru 1985	Thru 1990	Thru 2000
Airports	1.3	5.9	10.8
Air Traffic Control & Airspace	4.0	15.8	28.3
Aviation Activity	2.5	14.4	27.1
Aviation Safety	24.6	66.6	114.2
Financial Resources	0.6	26.6	65.6
Human Resources	0.6	7.5	17.8
Materiel Resources	8.3	60.3	124.9
NAS Facilities	2.0	26.6	55.8
Office Automation & Management Support	12.9	84.3	158.5
Total Savings	56.8	308.0	603.2*
Total Costs (from Table 1.1 above)	125.5	234.2	324.2
Net Dollar Savings	(68.7)	73.8	279.0

* Does not add due to rounding

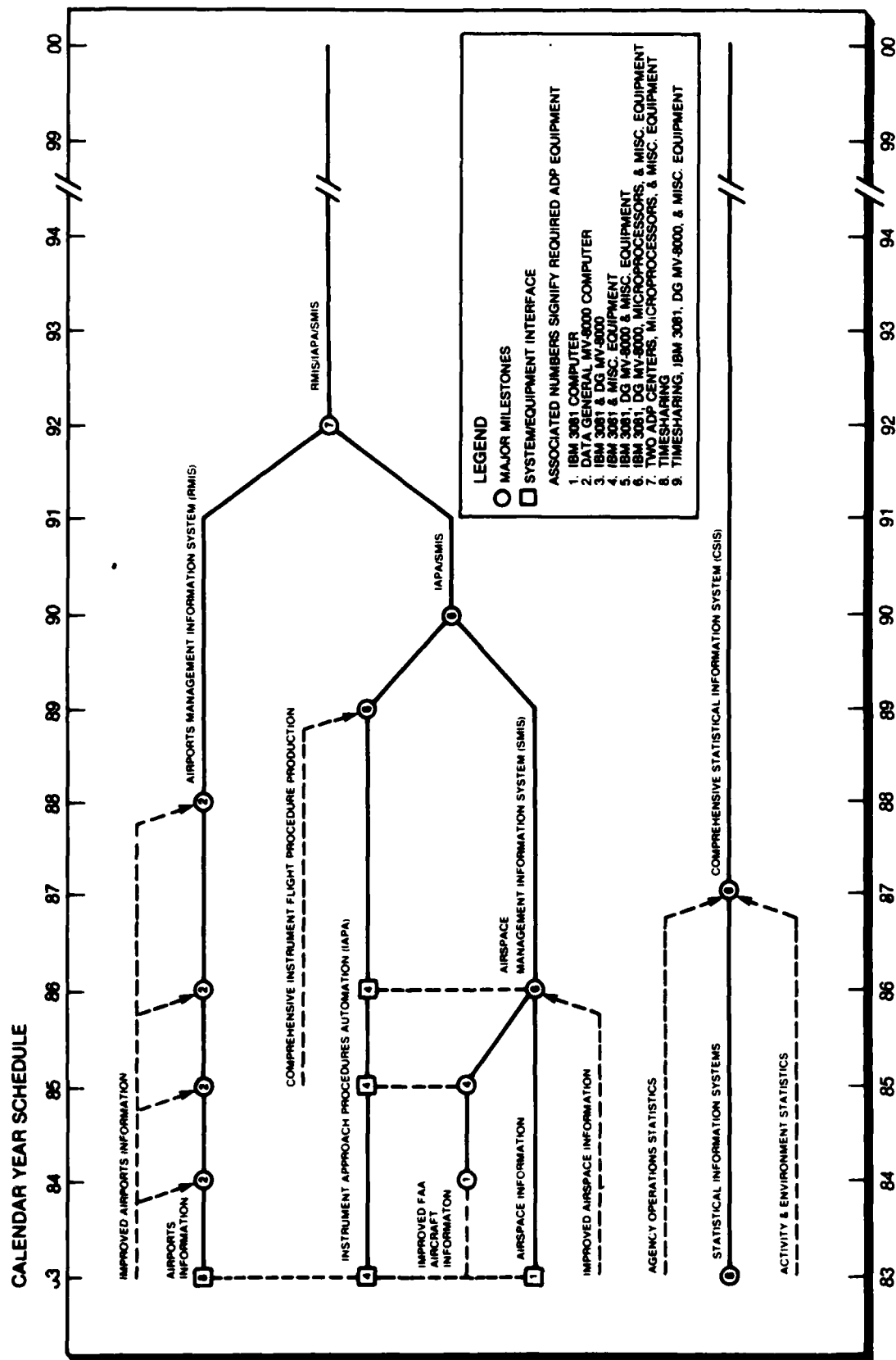


FIGURE 1.3 PROJECTS EVOLUTION SUMMARY

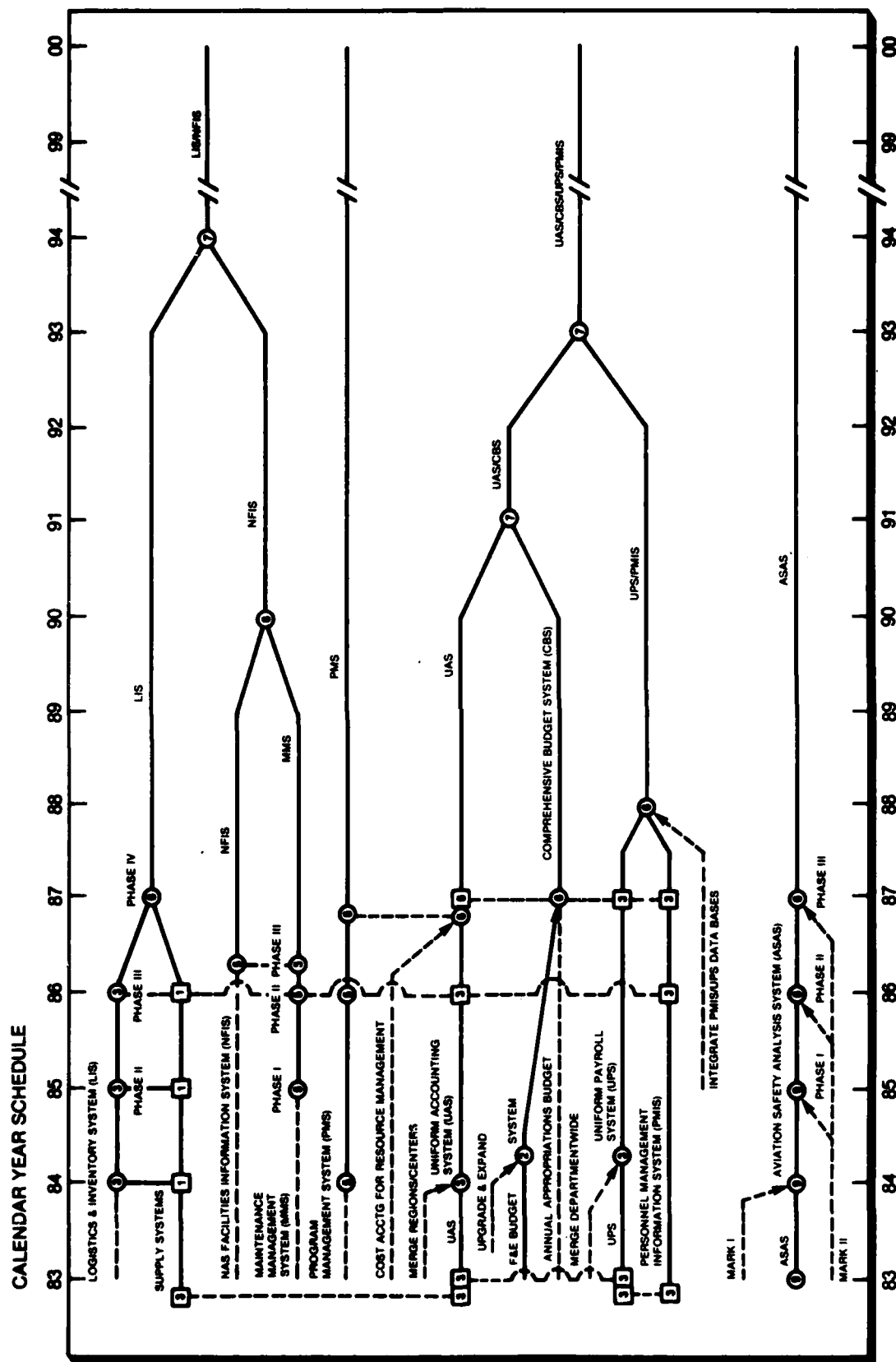


FIGURE 1.3 PROJECTS EVOLUTION SUMMARY

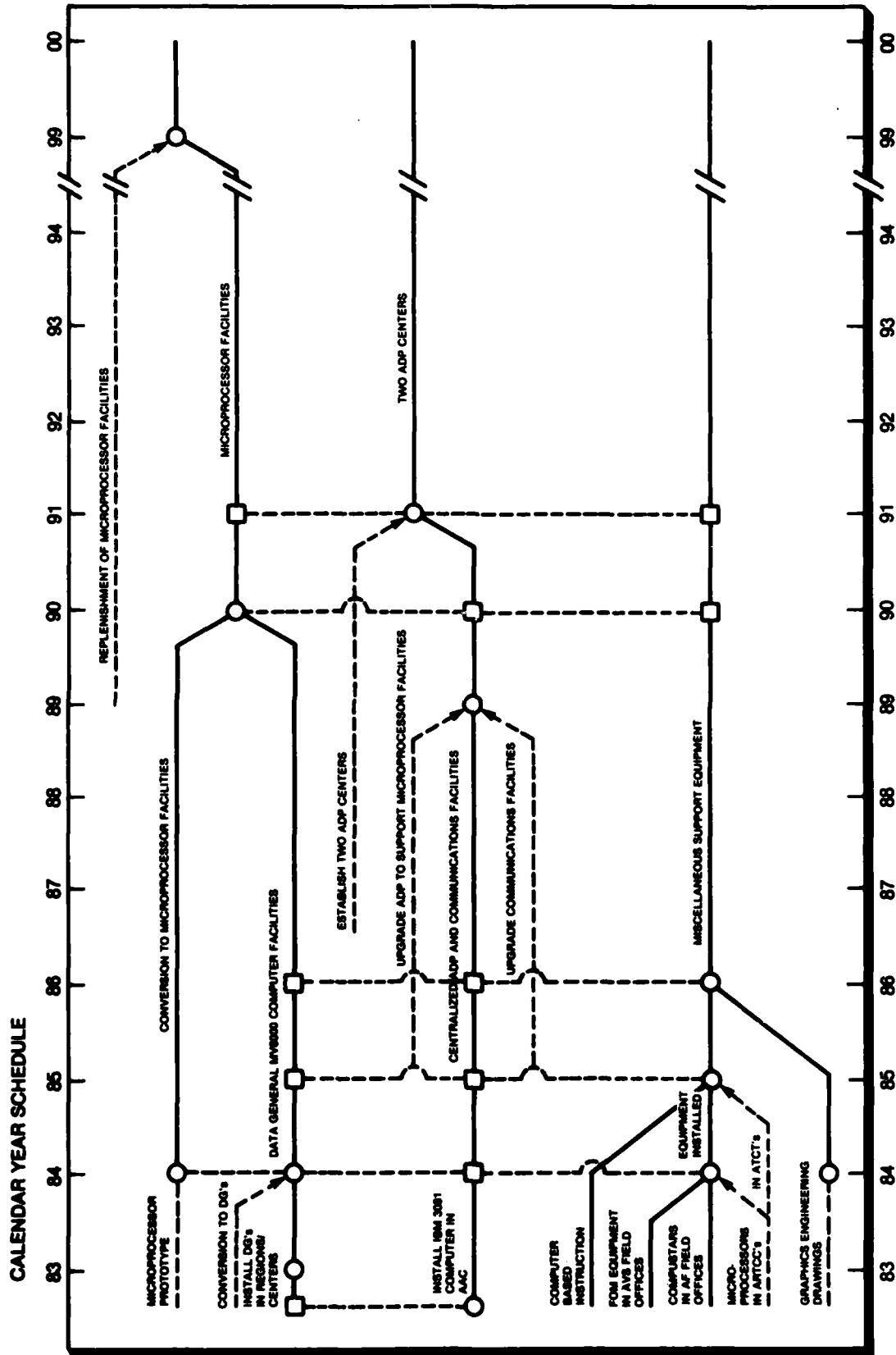


FIGURE 1.3 PROJECTS EVOLUTION SUMMARY

2

**Policies, Concepts, and
Strategies**

Chapter 2. POLICIES, CONCEPTS, AND STRATEGIES

200. GENERAL

This chapter describes the broad framework of policies, concepts, and strategies that underlie the development, implementation, and management of the Information Resources Management Plan and the related information and automated data processing activities. The chapter does not substitute for policy and procedural directives issued through normal procedures and channels, but rather provides the general framework and direction for the development or revision of such guidance. Such orders as 1370.52A, Management of Automated Data Systems, will be revised accordingly.

201. INFORMATION RESOURCES MANAGEMENT PLAN OVERSIGHT

Information is a critical ingredient in the operational system of the agency and a major resource in the success of the FAA. Therefore, FAA will use a top management steering group to:

- a. provide general program direction, priorities, and assurance of consistency of information activities with FAA missions and program objectives,
- b. review and shape information system program goals and objectives,
- c. assess and approve long and short term plans and resource allocations, and
- d. regularly monitor and evaluate program and project performance and decide on needed redirection.

202. LONG AND SHORT TERM INFORMATION RESOURCES MANAGEMENT PLANNING

The long term (strategic) Information Resources Management Plan will be supplemented with a shorter term (tactical) information plan. These plans will be updated regularly and approved by top management to serve as the basis for:

- a. bringing information system activities into proper relationships with changing agency missions and objectives,
- b. commitments on the part of all agency organizations to schedules, actions, functional relationships, and costs,
- c. assigning resources and priorities to the range of information needs, action plans, and improvement opportunities,

d. financial planning and budgeting within all appropriations and organizations as it relates to information resource activities, and

e. accounting for performance both functionally and financially for information resource activity results.

203. CENTRAL PROGRAM MANAGEMENT

The role of the central program management organization will be to:

a. regularly survey needs, plans, and progress to update and obtain approval for Information Resources Management Plans;

b. develop and update policies, procedures, and standards for:

(1) user organizations to define their information needs and to design, develop, document, and operate the systems required to satisfy those needs,

(2) obtaining and maintaining the "common system" of ADP hardware, general purpose software, and communications shared by all or many elements of the agency,

(3) developing, issuing, and maintaining the technical standards and procedures needed for ADP system operations and maintenance, and

(4) acquiring ADP hardware and software needed to support particular offices, facilities, and locations;

c. manage the integration of individual system design and operation activities into an effective national information system;

d. develop, issue, and maintain standardized data elements, data codes, and definitions for use throughout all FAA systems; and

e. establish and operate systems and procedures for tracking user and project costs, results, and achievement of objectives.

204. INFORMATION SYSTEMS MANAGEMENT

Management responsibilities for individual information systems reside with the primary user organization. This includes:

a. carrying out all system definition, justification, development, and improvement tasks in consultation with system users and operators at every level,

- b. obtaining financial and personnel resources for system development, operation, and maintenance,
- c. designing, developing, and maintaining data bases and files consistent with FAA data policies and the needs of all users,
- d. managing system operations and maintenance consistent with the needs of all system users, and
- e. regularly evaluating system performance and need in order to decide on system termination, improvement, or replacement.

205. DATA AND DATA BASE MANAGEMENT

The "data base approach" to system design and data management is central to FAA's efforts to manage these critical resources.

- a. Control of data should be central to system design, including obtaining data input and editing as close to the source as possible.
- b. Each data item should be stored in one master location and should not be copied indiscriminately. Many files may exist, but their contents should not overlap.
- c. Data collection responsibility should be assigned to those who can most effectively carry it out, regardless of their need for the data.
- d. Data access should be given to those who need the data without regard to their organizational affiliation or

geographic location with due regard to rights of individual privacy.

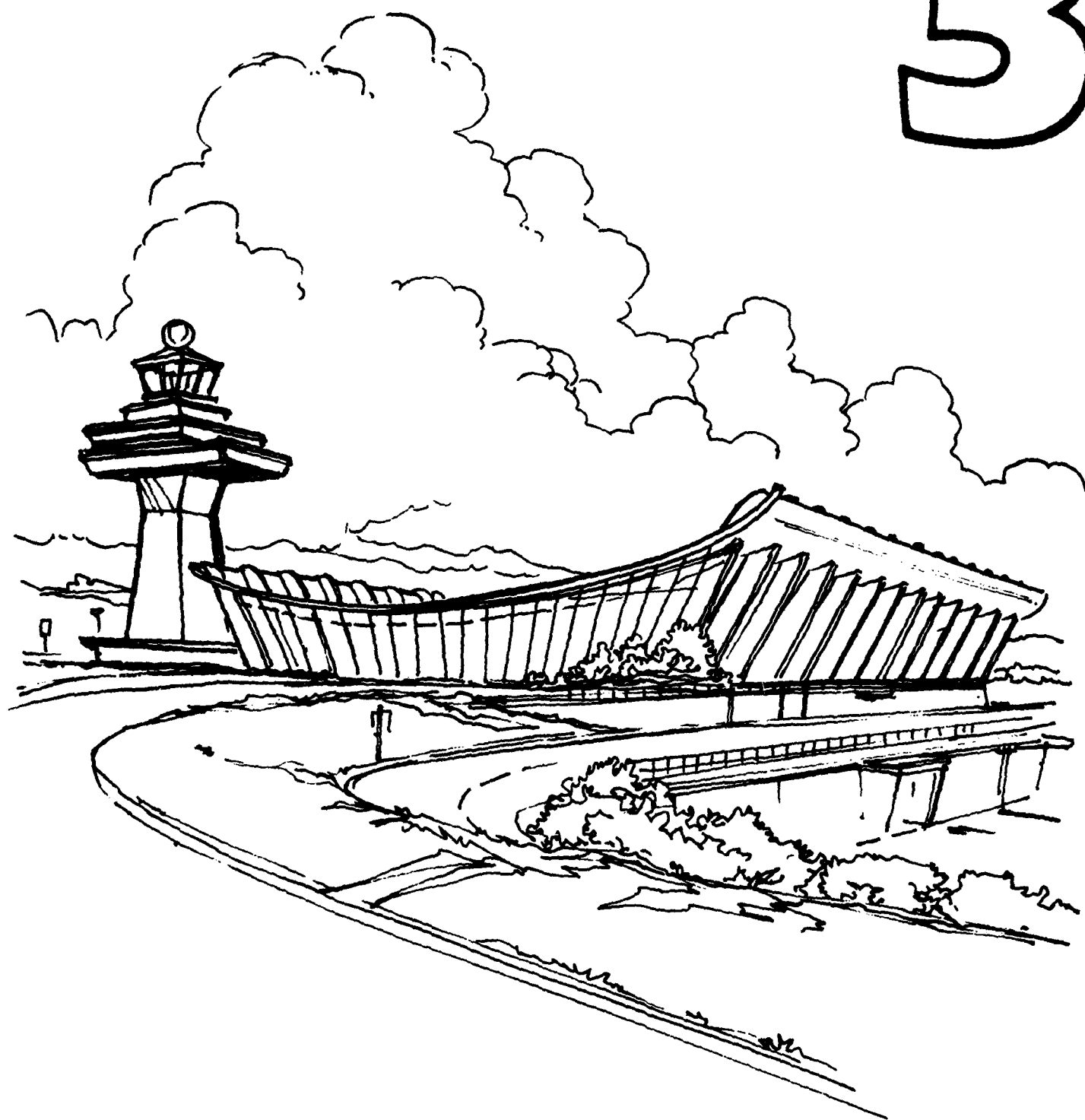
- e. All changes to data element names, codes, and definitions must be managed through FAA's data dictionary(ies).

206. PHYSICAL SYSTEMS MANAGEMENT

The concepts governing FAA's acquisition and use of the physical system are:

- a. A "common system" of shared equipment, communications, and software will be the backbone of the overall "physical system."
- b. User operated equipment, usually located in the user's office or nearby, will be available to provide ready access to the larger system for most users.
- c. The organizational or geographic placement of ADP equipment will not affect user access to the system or its services.
- d. The technical operation, maintenance, and improvement of the physical system should be carried out in a way that minimizes the disruption of service to system users.
- e. Any and all ADP equipment and resources should be considered as potential sources of support for approved applications, regardless of organizational or geographic location of the user or the resource.

3



Airports Information Requirements

Chapter 3. AIRPORTS INFORMATION REQUIREMENTS

Section 1. GENERAL

300. PRESENT ENVIRONMENT, PROBLEMS, AND DEFICIENCIES

Two distinct sets of functions are supported in the Airports Information area. They are the traditional Airports Program functions and the functions that support the operation and maintenance of the Metropolitan Washington Airports (AMA).

a. Traditional Airports Program functions include: (1) national airport planning, (2) administration of airport grant programs, (3) airport safety certifications, (4) collection and maintenance of airport facility data, (5) development of airport standards, (6) management of airport environmental and social requirements, (7) management of the compliance program, (8) airspace reviews, (9) management of relocation assistance programs, (10) airport related property programs, and (11) management of several other safety related programs. Functions (1) through (5) are discussed separately below; the remaining functions (6) through (11) are discussed as a group:

(1) The national airport planning function includes such activities as identifying future requirements for airports and airport development, developing eligibility criteria for airport grants, identifying potential joint-use candidates, identifying and analyzing airport capacity problems, and formulating and publishing the National Plan for Integrated Airports Systems (NPIAS). The NPIAS, formally the National Airport System Plan, is produced by an automated data processing (ADP) system that contains projected funding for airport planning and development grants, as well as other data about airports eligible for grants. The system operates on commercial timesharing. Data entry is from the regions. Airports personnel use available terminals to enter data into each region's portion of the data base. The consolidated data base is accessible by Airports personnel in Headquarters for review. The NPIAS system is generally satisfactory with a few exceptions. More edits are needed at the source of data entry. At this time, dedicated equipment is not available to all airports divisions, and sharing equipment with other organizations occasionally slows input processes. Output reports are fixed format and cannot be easily adjusted to suit new user requirements. Because the data operates on time-

sharing, exchange of data with the grants systems and the Airport Safety Data Systems is cumbersome and usually manual. Because of the difficulty of exchanging data, manual reviews are required to guarantee current valid airport data.

(2) The airport grant function includes developing policies, regulations, and guidance for awarding and administering grants of Federal funds to airports. Several aid programs still have active grant projects. The Federal Aid to Airports Program has only a few remaining active projects and is administered manually. The Airport Development Aid Program (ADAP) and Planning Grant Program (PGP) expired in 1981, but they still have hundreds of active grant projects. These programs are supported by the automated ADAP/PGP systems which operate at the Transportation Computer Center. Data forms are mailed to Headquarters where they are keypunched and processed. Data entry errors are corrected by Headquarters personnel. Several summary, fixed format output reports are generated. Data is forwarded to the grants system operated in the DOT/OST. The Airport Improvement Program (AIP) was authorized by the Airport and Airway Improvement Act of 1982. This program includes both development and planning grants. It is currently supported by an interim timesharing system that operates on a data base management (DBM) system. Data is currently being forwarded to Headquarters for entry. The system generates one standard report for the regions and a tape file for use in the grants systems operated in the DOT/OST. Other output is generated using the DBM's query capabilities. Several regions operate grants systems that assist in formulating grants programs prior to actual year grants awards. Except for two regions, there is no automated support for regional grants project management. Problems with the grants area generally relate to a labor-intensive data entry/error correction process and excessive manual workload in the field offices related to management of active grants projects and programming of grants funds.

(3) The airport safety certification function involves the inspection and certification of all airports with scheduled or unscheduled service of airplanes with a seating capacity of thirty or more persons. Currently, all

data to be reviewed must be retrieved from manual files in the airports division or district office. Results of the inspections are recorded on checklists and Letters of Correction documents. Records of enforcement actions are completed and mailed to the Aeronautical Center for entry into the Enforcement System. Status reports are sent to Headquarters. Within the Airports organization, there is no automated support for this system. Schedules for annual inspections and followup actions are maintained manually. Because of lack of automation in other airports regional programs, data required for the inspections may not be current. As a minimum, retrieval of the data is labor-intensive. Mailing reports to the Aeronautical Center for data entry in the Enforcement System results in considerable lapsed time and errors not easily corrected by airports personnel. Reports from the Enforcement System are not formatted for particular airport needs. Status reports provided to Airports Headquarters currently do not provide sufficient data to allow evaluation of program performance. Collection of additional data is time-consuming, and no history data is available to establish appropriate performance base lines.

(4) The collection and maintenance of airport facility data is a shared function between the Airports Program and the National Flight Data Center (NFDC). Data is collected by several methods: mail-in programs, inspections, letters, memorandums, and phone calls. Several data elements can only be updated by the Office of Airport Standards (AAS) and some only by NFDC. This function is supported by an automated data base known as the Aeronautical Information System which is maintained by NFDC on the Aeronautical Center computer. Currently, only AAS, NFDC, and the National Ocean Service have access to the data base. Availability of airport facility data is fundamental to all Airports Program functions, as well as many other agency functions. The lack of availability of current automated data precludes efficient use of airport data in other systems which cannot communicate with the NFDC data base. Lack of regional access to the data base limits the currency of data in the field and requires that most updates be mailed to Headquarters for data entry.

(5) The development of airport design, construction, configuration, and equipment standards is a responsibility of the Office of Airport Standards. These standards are implemented and enforced through Airports programs in the field, such as the certification program, airspace reviews, and airport development programs. The development of standards is supported by automation in several areas. This automation generally takes the form of special purpose systems that aid in engineering analysis and calculations. Some text editing support is also available. Currently, a Runway Friction Measurement System and four pavement analysis programs are in operation.

(6) Remaining functions in the Airports Program do not have automated support. Records are kept manually and systems are labor-intensive in varying degrees. Bird hazard analysis and safety programs for general aviation airports are two areas where there is a potential for savings if manual systems were automated.

b. The functions that support the operation and maintenance of the Metropolitan Washington Airports can be divided into three areas: (1) the engineering and maintenance functions, (2) the operating functions, and (3) the administrative services functions.

(1) The engineering and maintenance functions include design and construction of new facilities, rehabilitation of existing facilities, maintenance and repair of facilities, equipment and vehicles, and operation of the airports' utility systems. A major part of these functions includes the collection, analysis, and use of engineering data, utility records, and maintenance records. The present system is performed using handwritten entries and drawings. Obtaining proper engineering and maintenance information is dependent on the experience of airport personnel.

(2) The operations function of Metropolitan Washington Airports includes the day-to-day operations of Washington National Airport and Dulles International Airport, the security of the airports, the commercial operations, procurement, and property management support. Data currently used to manage these areas are stored in various formats in different parts of the organization. Production of specific reports and other information products requires extensive manual research. Information about commercial activity is supplied by tenants and concessionaires in several formats, making detailed analysis difficult.

(3) In the administrative services function, several national systems are being extended or revised to include Metropolitan Washington Airports (accounting, budget, personnel, and procurement). They are addressed in the Financial Resources, Human Resources, and Materiel Resources Information areas.

301. LONG TERM GOALS

a. **General.** The Airports Information Area has two goals: (1) to improve the accomplishing of the Airports Program functions by giving managers timely, accurate information to make decisions, and (2) to increase productivity by eliminating time-consuming, manual tasks. In order to reach these goals, the Airports Information plan calls for the implementation of a set of integrated data systems that will free personnel for critical program work and provide current, timely data to all functional areas. The basic concepts of the systems are that data will be entered as close as possible to its point of origin, data access for retrieval will be available to all parts of the agency that need the data, and individual

files in the systems will be linked to eliminate duplicate data and improve efficiency. The long term goals, as well as a discussion of the scope of the data base, functions to be supported, system access, and interfaces for each of the Airports functions, are as follows:

b. Traditional Airports Program Functions

(1) Airport Planning Function

(a) *Goals.* The objectives of automation in the airport planning function include the reduction of time required to perform airport capacity studies and the reduction of duplicate data entry by integrating the National Plan of Integrated Airports Systems with other Airports Program systems. Plans for this area include bringing the NPIAS automated system in-house and integrating the files with other Airports systems.

(b) *Scope of Data Base.* Data to be included describe airport categories, service levels, planned funding and types of recommended development.

(c) *Functions to be Supported.* Formulation of long range plans for development and publication of the NPIAS will be supported.

(d) *Access to System.* Access will be available to the regional airports divisions/district offices, Headquarters airports personnel, and other program areas that need information about planned airport development.

(e) *Interfaces.* The system will be interfaced with airport grants, airport certification, and airport safety data systems. Interchange of data will also be occasionally required, along with forecasting and air traffic activity systems.

(2) Airport Grant Function

(a) *Goals.* The objectives of automation in the airport grant function are to provide more efficient planning and control of grants projects, both in the regions and Headquarters.

(b) *Scope of Data Base.* In the regions, data bases will be established that contain five year planning/ programming funds and projects, funding and project data on actual grants, and project status information for management control. In Headquarters, funding and project data on grants will be extracted for management review in certain points in the project.

(c) *Functions to be Supported.* All functions related to grants administration will be supported. Data will be available for responding to ad hoc questions about grants funding from the Office of Management and Budget (OMB) and Congress.

(d) *Access to System.* Data will be provided to the Office of Budget and other program offices that need grants project planning and status information. Regional airports divisions and airports district offices, the Office of Airport Planning and Programming, and the Office of Airport Standards will have access to the system.

(e) *Interfaces.* The systems will eventually be interfaced with the National Plan for Integrated Airports Systems, the Uniform Accounting System (UAS), the budget systems, and other Airports systems.

(3) Airport Safety Certification and Compliance Function

(a) *Goals.* The objectives in the airport safety certification and compliance function automation are to reduce regional workload associated with airport inspections and to improve the availability of information on which to base management decisions.

(b) *Scope of Data Base.* Data to be collected in the regions include schedules, status, and the results of airport inspections. Inspections of larger general aviation airports and obligated airports may be included, as well as the inspections of certificated airports. Minority business data may eventually be included.

(c) *Functions to be Supported.* Inspection scheduling, accomplishment, and reporting of deficiencies on certificated airports and airports with Federal agreements will be supported. The improvement of safety at general aviation airports will be encouraged by support of voluntary inspection programs.

(d) *Access to System.* Airports regional divisions, airports district offices, and the Office of Airport Standards will have access. Results of inspections will be provided for all programs that require the data.

(e) *Interfaces.* The systems will interface with the Enforcement System and all other Airports systems in the regions.

(4) Airport Safety Data System

(a) *Goals.* The goal of automation in the airport safety data system is to eliminate duplicate data entry in other Airports systems and to provide access to systems operating on the agency's general purpose administrative computers.

(b) *Scope of Data Base.* This data will include airports, runway and remarks data from the Aeronautical Information System, obstruction data, and airspace data.

(c) *Functions to be Supported.* All Airports Program functions will be supported. Other agency functions requiring airport data will be supported.

(d) *Access to System.* Access for update and retrieval will be limited to the airports divisions, NFDC, and the Office of Airport Standards. Retrieval access will be available to other organizations.

(e) *Interfaces.* The system will be interfaced with other Airports systems and the Aeronautical Information System.

(5) Airport Standards

(a) *Goals.* The goals of automation in the airport standards area are to improve and expedite the development of standards by providing special software to facilitate or make possible engineering analysis.

(b) *Scope of Data Base.* Data includes characteristics of pavement materials, physical features of airplanes, and other scientific data needed for stress calculations.

(c) *Functions to be Supported.* Research about runway surfaces and construction as well as standards for design and construction will be supported.

(d) *Access to System.* Engineers with a need to use the programs will have access.

(e) *Interfaces.* None.

(6) Bird Hazard System

(a) *Goals.* The objective of automation of the Bird Hazard System is to reduce the manual workload associated with performing analysis of the data and preparing reports.

(b) *Scope of Data Base.* Data included describes types of birds involved in incidents, types of planes, damage, and location of the incidents.

(c) *Functions to be Supported.* Safety analysis on the bird hazard area will be supported.

(d) *Access to System.* Access will be provided to the regions and the Office of Airport Standards.

(e) *Interfaces.* The system will be interfaced with the International Civil Aviation Organization (ICAO) Bird Strike/ Incident System.

c. Metropolitan Washington Airports

(1) Engineering and Maintenance

(a) *Goals.* In the engineering and maintenance area, the plan is to develop a set of systems to make this function more productive and effective.

(b) *Scope of Data Base.* The Maintenance and Work Order System will increase the efficiency of issuing and controlling work orders and inspection schedules. The system will contain current status of work orders and maintenance, planned scheduling, projected and actual costs, as well as historical data for analysis purposes.

(c) *Functions to be Supported.* This system will support work order processing in the engineering and maintenance functions at AMA.

(d) *Access to System.* Engineering Divisions and Engineering and Maintenance Divisions at both airports and the Administrative Systems Division will have access.

(e) *Interfaces.* Uniform Accounting System.

(2) Operations

(a) *Goals.* In the operations area, this plan will automate a set of subsystems that will provide improved management control in the traffic flow.

(b) *Scope of Data Base.* The data to be included describe taxi service and the numbers of commuter vehicles using the Dulles access road and data about taxi service.

(c) *Functions to be Supported.* Traffic management functions will be supported.

(d) *Access to System.* Management personnel, the Administrative Services Division, Business Operations Division, and the Public Safety Division will have access.

(e) *Interfaces.* None.

302. INFORMATION SYSTEM EVOLUTION

a. *Near Term (To 1985).* In the near term, the plan includes those projects that will achieve a basic regional system and, at the same time, meet the Airports Program priorities for immediate support from automation. The near term projects were given priority because of the critical need for grants management and airport certification information. They will establish regional source data entry and a distributed data base system. Headquarters consolidated data will be drawn from the regional systems. The major activities during this period include: the development and implementation of the Regional Grants Management System which is the first in-house national airports system, the design and implementation of the Headquarters Grants Management System, and the design and implementation of the Airport Certification/Compliance System. The Grants Management and Airport Certification/Compliance Systems will actually be integrated subsystems of the Airports Information System.

b. *Intermediate Term (To 1990).* The intermediate term will be highlighted by the distribution of Airport Safety Data into the regional system. Source data entry of airport data and retrieval capabilities will be initiated. Any modifications to the previously existing system will be made to eliminate redundant data between grants, certification, and airport data collection programs. With the implementation of the regional airports data system, all additional program data and analytical tools can be treated as additional subsystems to be incorporated in a truly integrated airports information system. The National Plan of Integrated Airports System will be converted to operate on agency computers. Another activity to be initiated in the intermediate timeframe is a modification of existing grants and airport planning systems required by changes in the airports grants legislation. It is anticipated that defederalization would have little impact on the system. Implementation of a block grant program would require the addition of a "block grant" system to manage current grants. Within the Metropolitan Washington Airports, interfaces with national administrative systems will be completed.

c. *Long Term (To 2000).* The long term time frame will be characterized by automating those portions of the Airports programs that were not previously automated and integrating special analytical and management tools into the Airports systems. Automated interfaces of agency systems will be improved. If grants legislation is not modified in 1987, revisions can be expected in the long term that will affect grants and planning subsystems.

303. RETURN ON THE INVESTMENT

Automation of information necessary for the Airports Program functions and the Metropolitan Washington Airports functions will produce many intangible benefits in the areas of program management and evaluation. Estimated payback for all the planned projects range from 1 to 2.6 years. Most of the savings will result from increased productivity.

TABLE 3.1 SUMMARY OF COSTS AND SAVINGS
(Dollars in Millions)

	1983	1985	1990	2000
Cumulative Savings	0.1	1.6	8.9	24.5
Cumulative Project Costs	0.5	1.7	2.3	2.7
Net	(0.4)	(0.1)	6.6	21.8
Discounted Cumulative Savings	0.1	1.3	5.9	10.8
Discounted Cumulative Project Costs	0.5	1.5	1.9	2.1
Discounted Net	(0.4)	(0.2)	4.0	8.7
Direct FTE Cumulative Savings	3	21	33	33

304. IMPACTS

a. General. The implementation of projects in this plan will make current Airports Program data available to all parts of the agency. Time to search for and collect data will be reduced, allowing more time to accomplish increased program workload. Airports organizations will have a greater ability to respond to ad hoc information requests from external groups as well as other parts of the agency. Data on which to base evaluations of program accomplishment will also be more readily available. Automation of engineering and maintenance functions at Metropolitan Washington Airports will improve efficiency through better employee utilization. False starts and project errors will be decreased. Construction cost overruns and claims will be reduced by eliminating construction errors resulting from faulty engineering information. Administrative services will be improved by extending national agency systems to Metropolitan Washington Airports.

b. Organizational. This plan requires no organization changes.

c. Program. Some procedural changes will be required in newly automated functions. Source data entry and edit will require guidelines. Fund control portions of the grants systems will need to be revised to include automated controls. Security of data will need to be increased.

305. SUMMARY OF CHANGES

a. Procedural

(1) Source data entry/edit will be established for all systems.

(2) Airports Program systems will be interfaced to eliminate redundant data entry.

(3) The regions will have distributed data bases with consolidated/summary data extracted for Headquarters use.

(4) The Regional Grants Management System will establish the basis for an integrated, distributed Airports Information System. The Headquarters Grants Management System will be brought in-house.

(5) The certification and compliance program will be automated to provide reduced scheduling workload and increased management information.

(6) Airport safety data will be key entered in the field and current data will be made available at the field office level.

(7) The National Plan for Integrated Airports Systems will be brought in-house to interface with other agency systems.

(8) Several special purpose modeling or analytical systems will be implemented if they prove to be cost-effective.

(9) Engineering and maintenance functions at the Metropolitan Washington Airports will be made more efficient by automation of work order records.

(10) Various administrative systems of Metropolitan Washington Airports will be interfaced with national systems.

(11) Traffic management at Metropolitan Washington Airports will be improved with the implementation of taxi cab and commuter traffic control systems.

b. Automatic Data Processing (ADP). All Airports Program systems will operate on compatible agency equipment.

Section 2. PROJECTS SUMMARY

TABLE 3.2 PROJECT NAMES, SCHEDULES, RELATED AGENCY OBJECTIVES, AND OFFICE OF PRIMARY RESPONSIBILITY (OPR)

<i>Projects</i>	<i>Start</i>	<i>Completion</i>	<i>Related Agency Objectives</i>	<i>OPR</i>
Grants Management—Headquarters System	1983	1984	1, 3, 5	ARP
Grants Management—Regional System	1982	1984	1, 3, 5	ARP
National Plan of Integrated Airport Systems (NPIAS) Modifications	1987	1988	3	ARP
Airport Certification/Compliance System	1983	1985	1, 5	ARP
Airport Safety Data System	1984	1986	1, 5	ARP
Bird Hazard System	1984	1984	1	ARP
Pavement Analysis System	1985	1985	1, 5	ARP
Post 1987 Legislation	1987 and/or 1991	1988 and/or 1993	1, 3, 5	ARP
AMA Engineering and Maintenance System	1984	1986	3, 8	AMA
AMA Operations System	1983	1984	3, 8	AMA

1. Maintain or Improve Current Levels of U.S. Aviation Safety
2. Prepare and Implement Programs in Support of the Agency's Human Relations Policy
3. Continue the FAA's Long Range Planning Program
4. Complete Implementation of the Management Organization and Establish the Systems and Procedures Needed to Assure Efficient Allocation of Human and Fiscal Resources
5. Aggressively Pursue Opportunities to Reduce, Eliminate, or Otherwise Improve the Agency's Regulatory Burden
6. Improve FAA's Preeminence as the World Aviation Authority
7. Continue and Expand the Agency Program for Employment and Advancement of Handicapped, Minorities, and Women Employees
8. Provide All Services of the FAA, Excluding the Airways Modernization Program, at a Cost Not Greater than the 1980 FAA Budget, Adjusted for Inflation

FIGURE 3.1 AGENCY OBJECTIVES FOR FY 1983

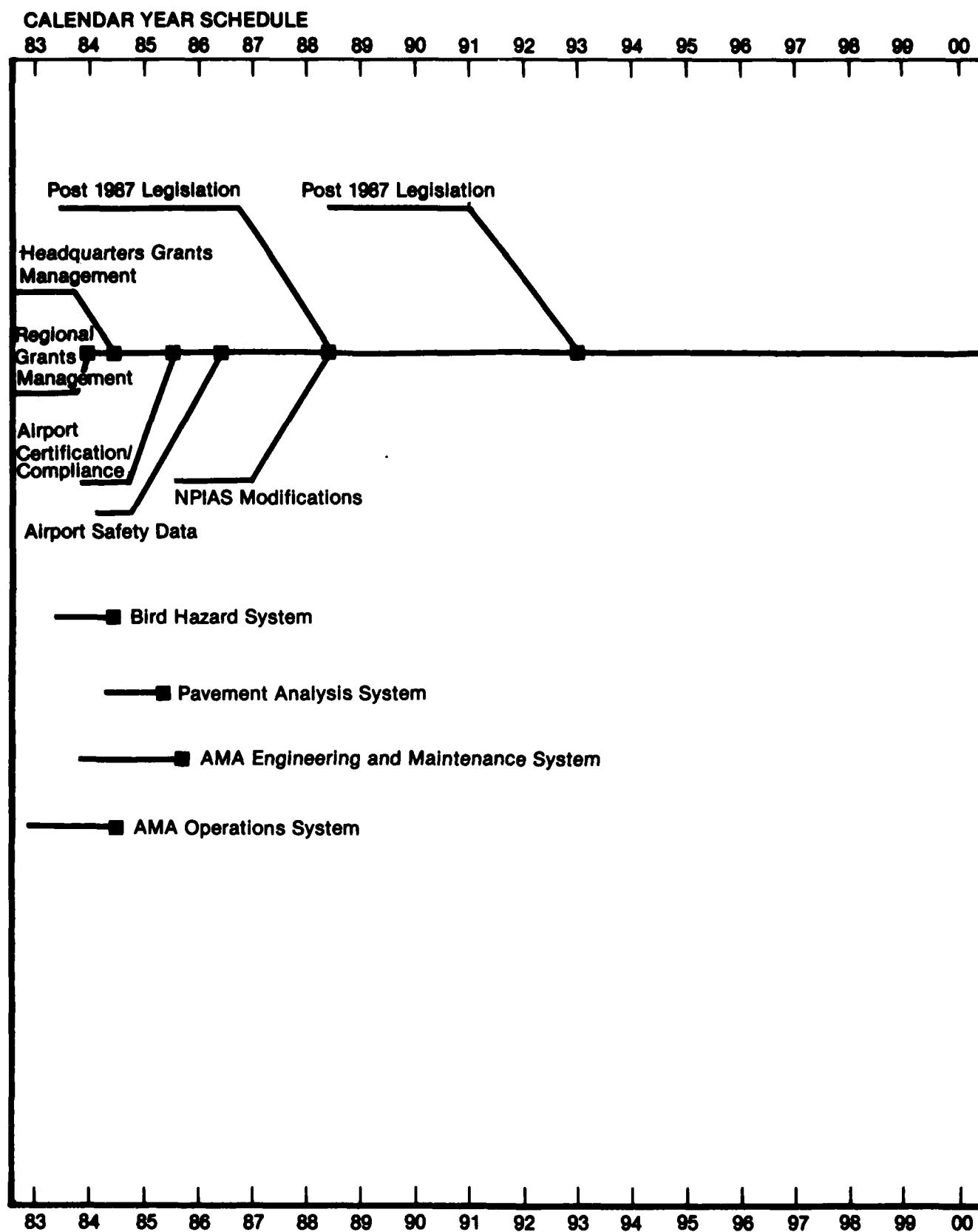


FIGURE 3.2 PROJECTS EVOLUTION

Section 3. SPECIFIC PROJECTS

308. PROJECT: Headquarters Grants Management System

a. Purpose: To provide timely data to support management oversight of the Airports Improvement Program in a form that can be manipulated for analysis and fund control.

b. Approach: Extract project data from the regional portions of the Grants Management System. Consolidate the data and make it accessible to Headquarters personnel responsible for the management and evaluation of the grants programs.

c. Equipment Requirements and Implications: Terminals must be available in Airports Headquarters

offices. Equipment must be compatible with regional equipment.

d. Schedule:

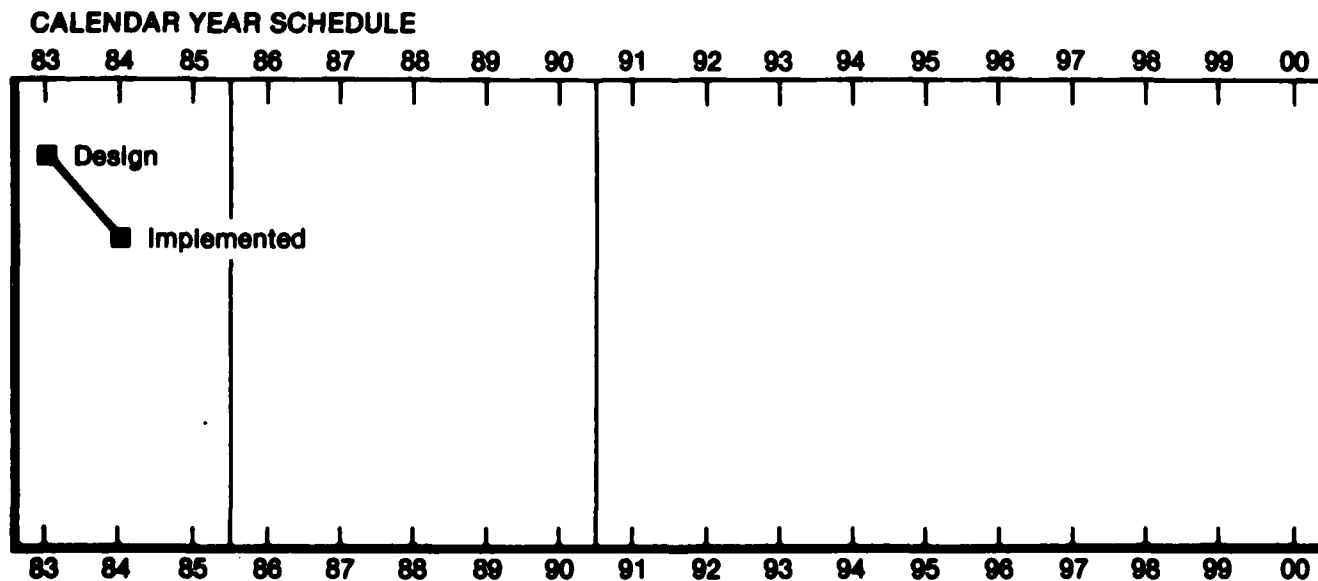
- | | |
|---------------|-----------|
| (1) Design | 1983 |
| (2) Implement | 1983—1984 |

e. Related Projects and Activities. The Regional Grants Management System, Financial Resources Information, and the Post 1987 Legislation project.

f. Costs:

Dollars in Thousands

- | | |
|--|---------|
| (1) Development costs (based on 1983 dollars) | \$274.4 |
| (2) Annual savings after complete implementation | \$191.3 |



307. PROJECT: Regional Grants Management System

a. Purpose: To provide program managers with timely information on planned and existing grants. To provide a planning tool for modeling projected funding.

b. Approach: Grants data will be entered in the regional airports division and/or the airports district office. The data will include funding levels and proposed projects for up to five planning years. The funding data may be automatically distributed to projects by the system and/or entered based on management decision. Once actual grant programs are agreed upon the funding and status of projects will be tracked to completion. Data at certain predetermined points in the projects will be transmitted to Headquarters for review

c. Equipment Requirements and Implications: All regions must have access to compatible hardware. Terminals will be required in airports divisions and airports district offices.

d. Schedule:

(1) Design	1982—1983
(2) Implement	1983—1984

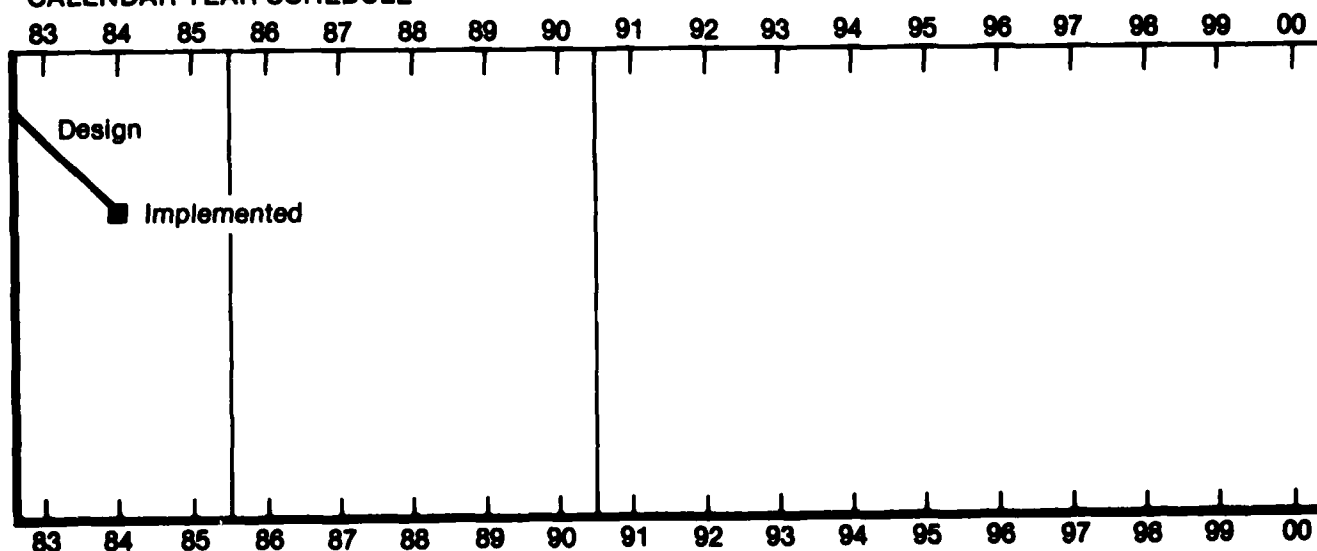
e. Related Projects and Activities: Headquarters Grants Management System and Financial Resources Information.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$420.3
(2) Annual savings after complete implementation	\$306.0

CALENDAR YEAR SCHEDULE



308. PROJECT: National Plan of Integrated Airport Systems (NPIAS) Modifications

a. Purpose: This system provides automated support for airport planning and publication of the National Plan for Integrated Airport Systems plan. It contains data about the universe of airports that are eligible for Federal funding. Data in the system describe projected development at airports and their cost. This project will integrate the data into the regional airports systems, eliminating redundant data and improving regional access to the system.

b. Approach: The NPIAS system currently operates on timesharing and is updated by regional offices. The system will be transferred to compatible FAA hardware, and data will be extracted from the regional systems to support publication of the NPIAS.

c. Equipment Requirements and Implications: All regions must have access to compatible hardware. Terminals will be required in airports divisions and airports district offices.

d. Schedule:

(1) Requirements	1987
(2) Design	1987—1988
(3) Implement	1988

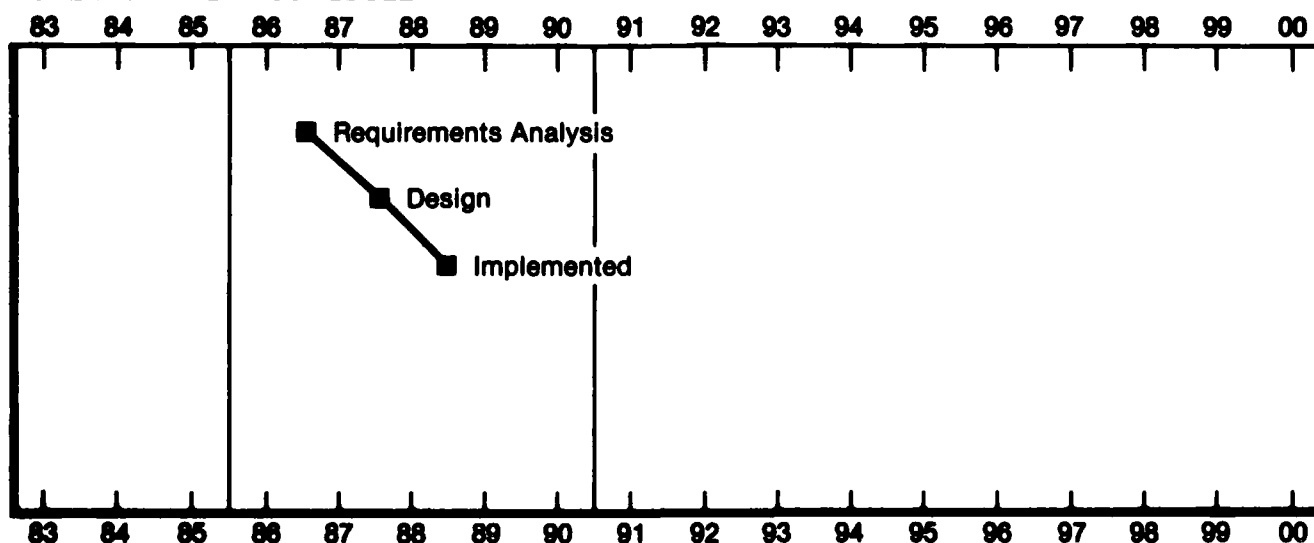
e. Related Projects and Activities: Headquarters Grants Management System and Regional Grants Management System.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$245.0
(2) Annual savings after complete implementation	\$95.5

CALENDAR YEAR SCHEDULE



309. PROJECT: Airport Certification/Compliance System

a. Purpose: To provide data for management and evaluation of the Airport Compliance and Certification Program and to permit analysis of trends in airport deficiencies identified in inspections.

b. Approach: Automate data about inspection scheduling and the results of inspections. Add this data to regional systems and make it accessible to Headquarters for analysis. Automate the hand-off of enforcement data to the Evaluations/Enforcement System.

c. Equipment Requirements and Implications: This system assumes terminals will be available in airports

division and airports district offices. Equipment can be shared with the airport grants systems.

d. Schedule:

(1) Requirements	1983
(2) Design	1984—1985
(3) Implement	1985

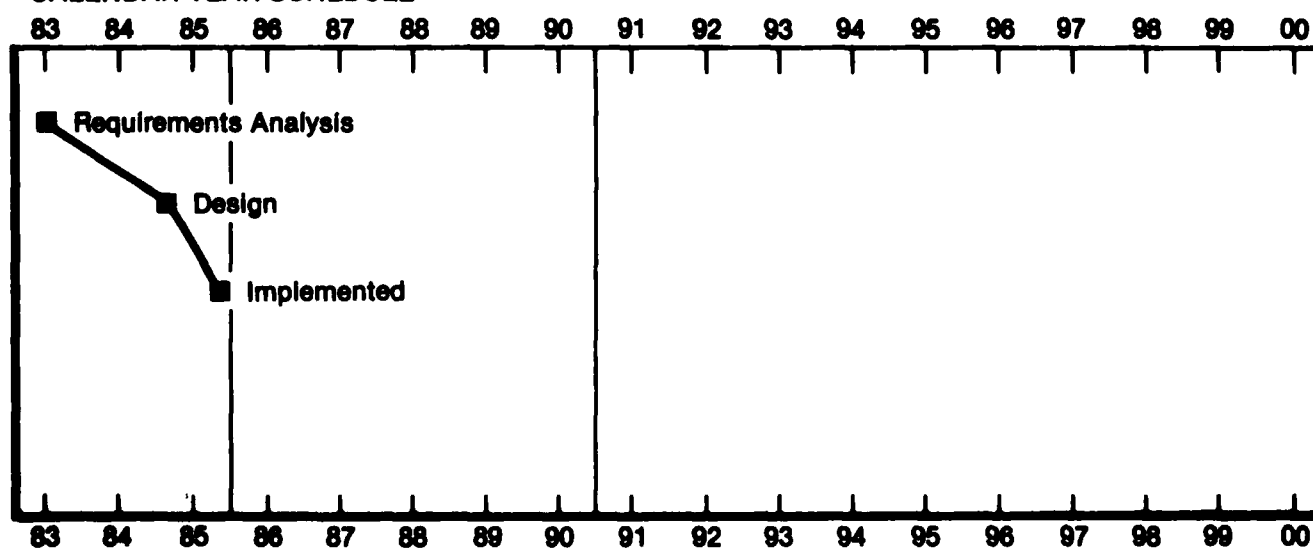
e. Related Projects and Activities: Assumes implementation of the Regional Grants Management System and will involve interfacing with existing enforcement systems.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$370.6
(2) Annual savings after complete implementation	\$288.1

CALENDAR YEAR SCHEDULE



310. PROJECT: Airport Safety Data System

a. Purpose: This project will provide access to Airports data in the regions.

b. Approach: Software will be developed for source data entry in the airports divisions. Validation of data will be performed on software in the NFDC system. Validated data will be returned to the regions and integrated with the other airports files.

c. Equipment Requirements and Implications: Depending on total program activity, this system may require additional terminals in some regions.

d. Schedule:

(1) Requirements	1984
(2) Design	1984—1985
(3) Implement	1985—1986

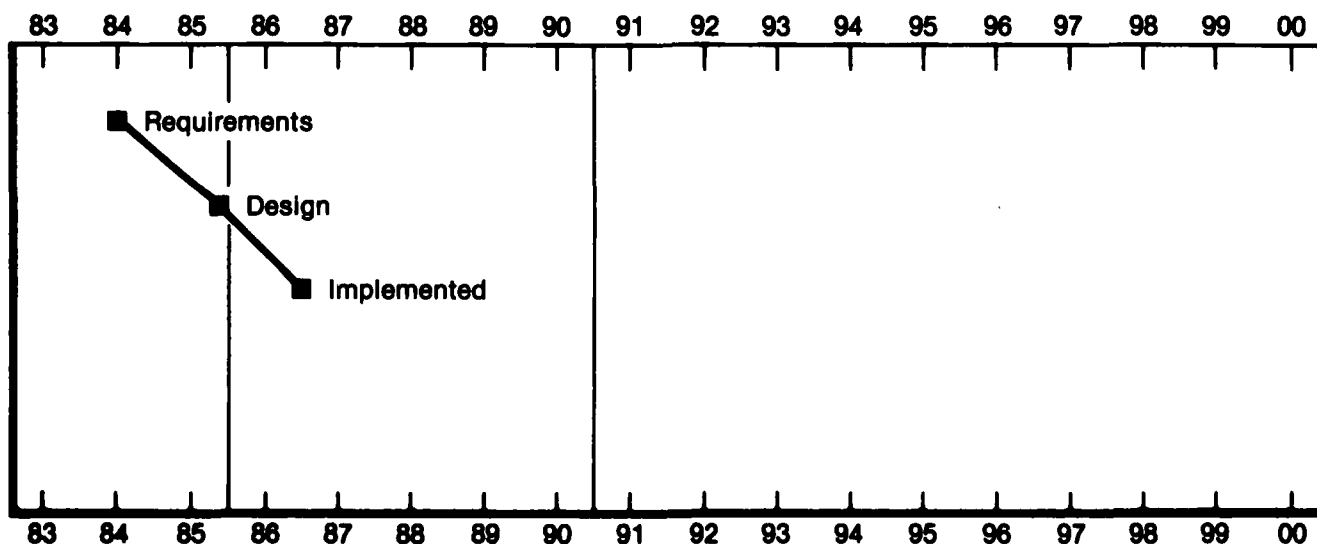
e. Related Projects and Activities: Regional Grants Management System.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$243.9
(2) Annual savings after complete implementation	\$165.0

CALENDAR YEAR SCHEDULE



311. PROJECT: Bird Hazard System

a. Purpose: This system will reduce the manual workload associated with analyzing bird strike data and preparing input for the ICAO Bird Strike System.

b. Approach: Convert a copy of the ICAO Bird Strike System to operate on agency computers. Tape output to the system operated by ICAO will be produced.

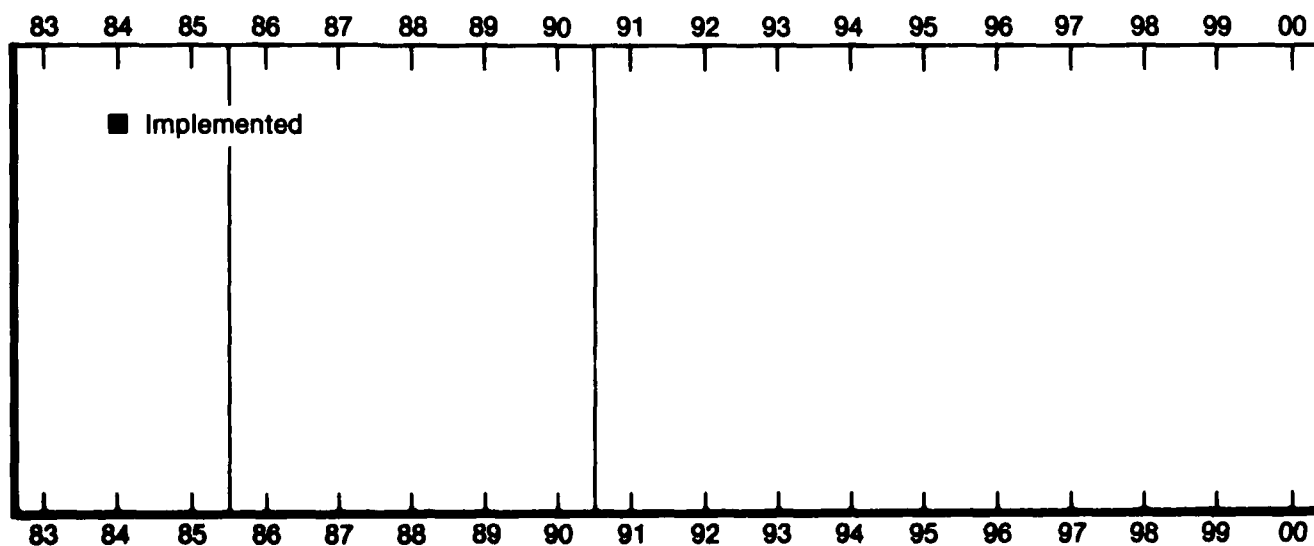
c. Equipment Requirements and Implications: A terminal will be required in the Office of Airport Standards.

d. Schedule:

Implement 1984

e. Related Projects and Activities: None**f. Costs:***Dollars in Thousands*

(1) Development costs (based on 1983 dollars)	\$1.9
(2) Annual savings after complete implementation	\$20.4

CALENDAR YEAR SCHEDULE

312. PROJECT: Pavement Analysis System

a. Purpose: To analyze pavement characteristics to support the establishment of Airport Standards. This will involve a set of programs that will assist in the analysis of stress in concrete and asphalt pavements and will assist in the drawing of design curves. Additional programs will support evaluation of concrete pavements and will perform pavement strength calculations.

b. Approach: A new model will be implemented at TCC where current pavement analysis programs operate.

c. Equipment Requirements and Implications: For agencywide use of the system, communications between the regional computer system and TCC must be established.

d. Schedule:

Implement 1985

e. Related Projects and Activities: None

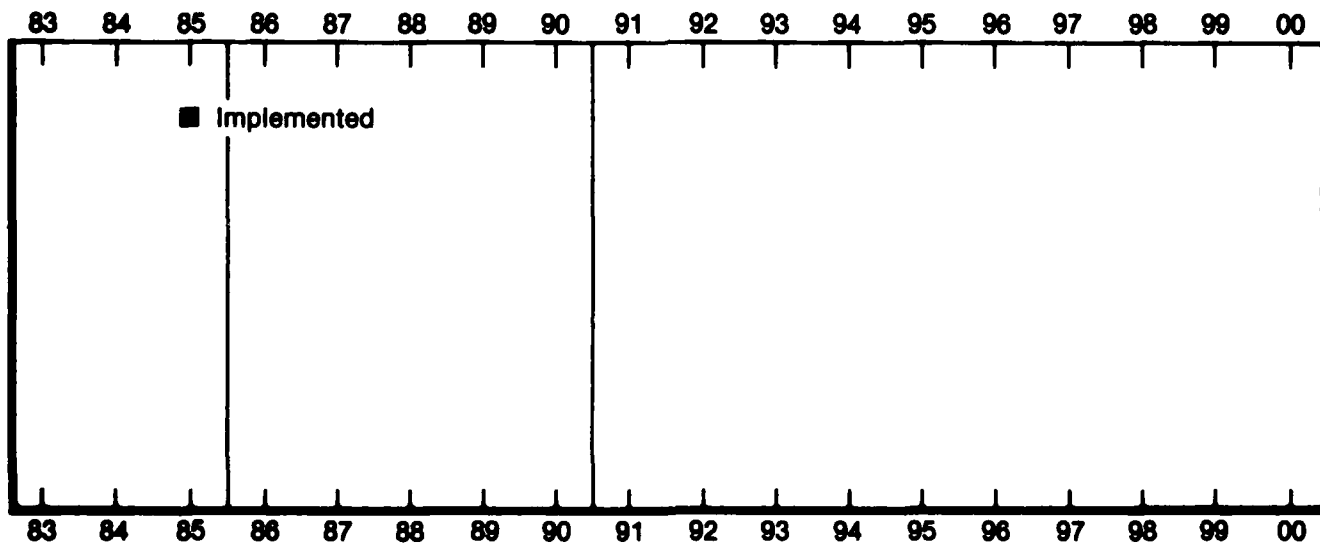
f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars) \$26.2

(2) Annual savings after complete implementation (\$4.1)

CALENDAR YEAR SCHEDULE



313. PROJECT: Post 1987 Legislation

a. Purpose: This project includes all modifications required in the Airports Information System to accommodate changes in the Airport Improvement Program (AIP) or to implement a successor legislation.

b. Approach. Design will begin when there is a reasonable certainty that new/modified legislation will be enacted. If the current AIP is extended, this project will be delayed until the extension approaches expiration. It is anticipated that a delayed project will require more extensive changes and will involve more workload since it is likely to involve a complete rewrite of the legislation.

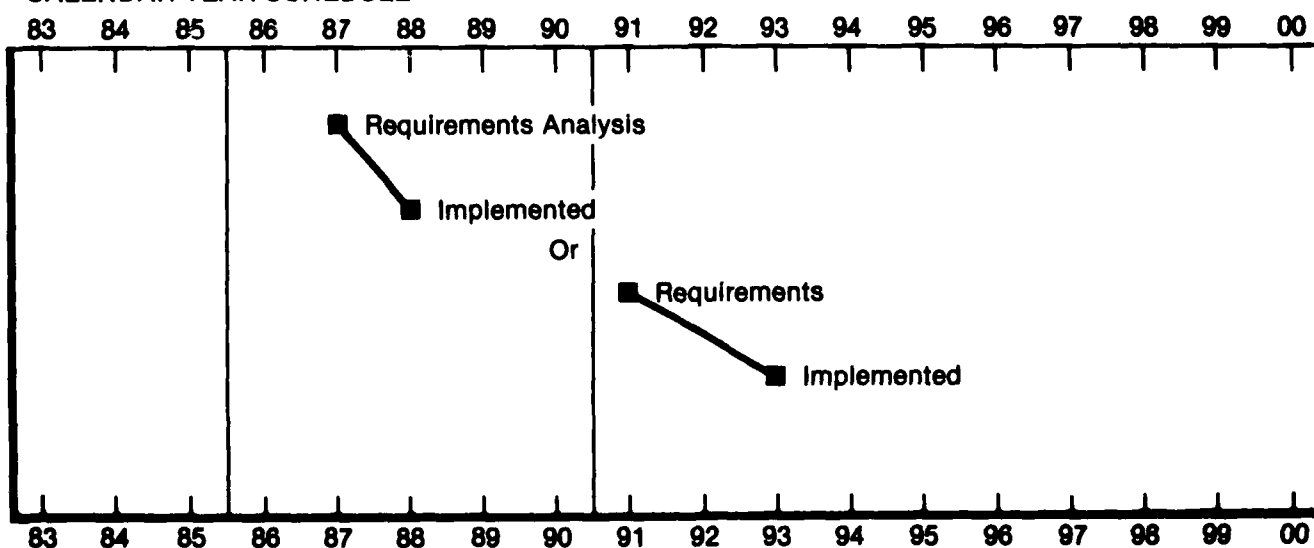
c. Equipment Requirements and Implications: None

d. Schedule:

(1) Requirements	1987
(2) Design and implement	1987—1988
or	
(1) Requirements	1991—1992
(2) Design and implement	1992—1993

e. Related Projects and Activities: None**f. Costs:***Dollars in Thousands*

(1) Development costs (based on 1983 dollars)	\$581.0
(2) Annual savings after complete implementation	undetermined

CALENDAR YEAR SCHEDULE

**314. PROJECT: Metropolitan Washington
Airports Engineering and Maintenance
System**

a. Purpose. To improve efficiency by enabling managers to consolidate, summarize, update, and present information for program control.

b. Approach: Meet requirements by developing a work order scheduling and control system. Contract development and off-the-shelf packages will be used whenever possible. Other agency management control systems will be analyzed to see if they can be used or can provide service.

c. Equipment Requirements and Implications: Terminals to support engineering design will be required.

d. Schedule:

(1) Requirements	1984
(2) Design	1985
(3) Implement	1985—1986

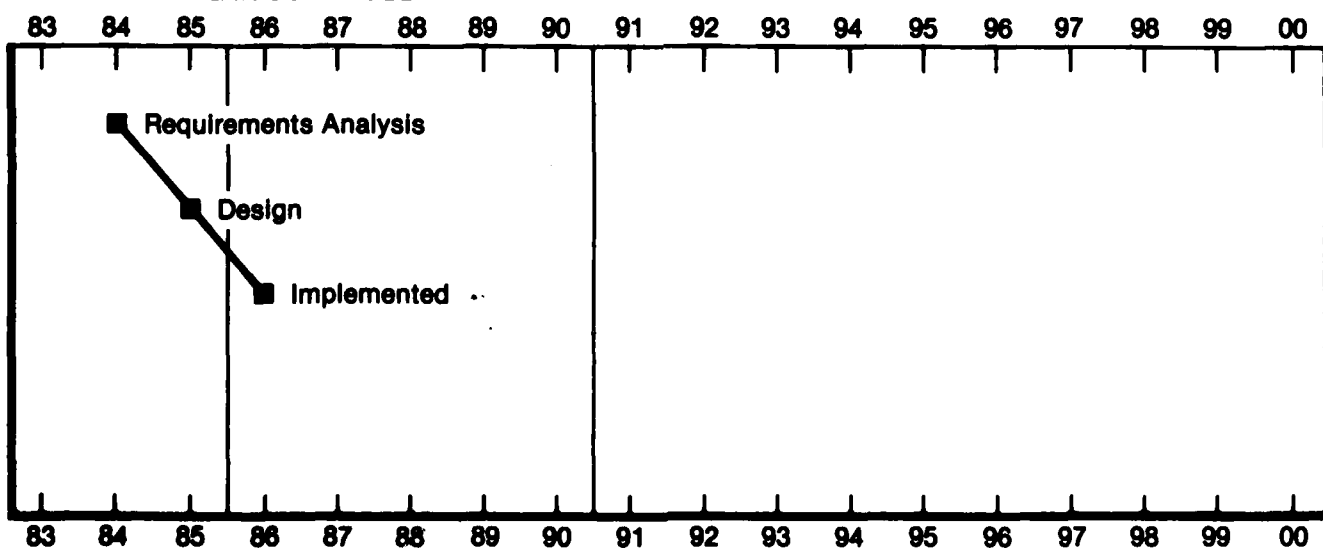
e. Related Projects and Activities: None

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$342.8
(2) Annual savings after complete implementation	\$133.0

CALENDAR YEAR SCHEDULE



315. PROJECT: Metropolitan Washington Airports Operations System

a. Purpose: To improve traffic control at Washington National Airport and Dulles International Airport and make business operations more efficient and cost-effective.

b. Approach: Systems will be designed to monitor the commuter traffic at Dulles Airport and the taxi service at National Airport. Commercial packages will be used wherever possible.

c. Equipment Requirements and Implications: Terminals/printers will be required for each subsystem.

d. Schedule:

(1) Taxi Cab Licensing System design and implementation 1983—1984

(2) Commuter Backtracking System implementation 1983

e. Related Projects and Activities: Metropolitan Washington Airports portions of the upgrade of the UAS and the National Procurement System.

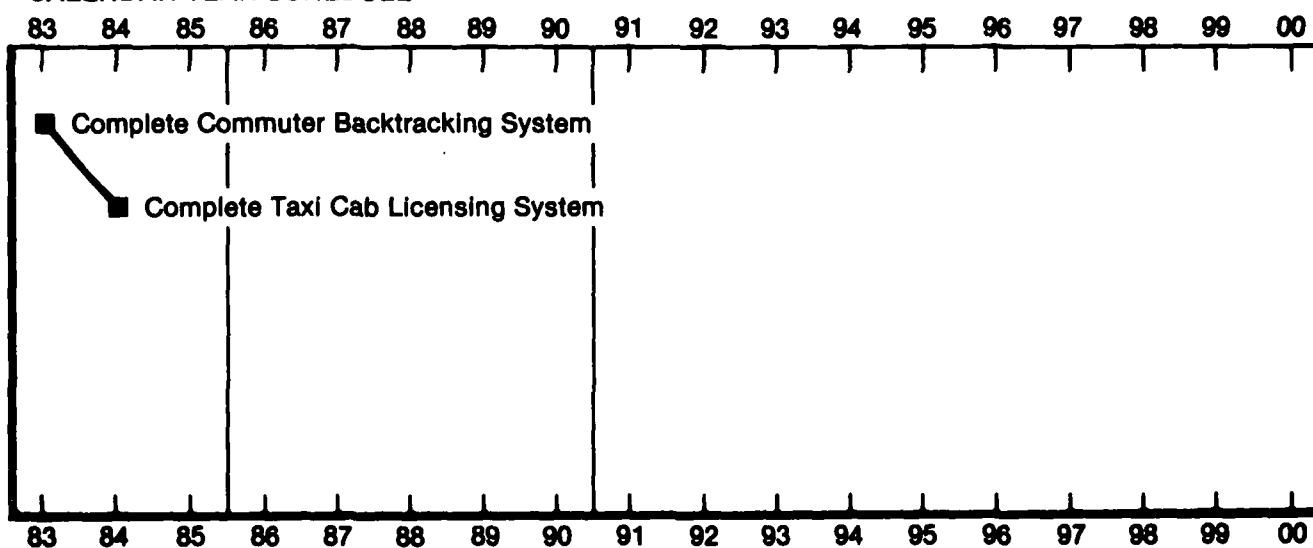
f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars) \$165.3

(2) Annual savings after complete implementation \$367.2

CALENDAR YEAR SCHEDULE



Air Traffic Control (ATC) and Airspace Information Requirements

Chapter 4. AIR TRAFFIC CONTROL (ATC) AND AIRSPACE INFORMATION REQUIREMENTS

Section I. GENERAL

400. PRESENT ENVIRONMENT, PROBLEMS, AND DEFICIENCIES

This area consists of four related but separate systems:

- Aeronautical Information System (AIS)
- Obstruction Evaluation and Airport Airspace Analysis (OE and AAA) and Instrument Approach Procedures Automation (IAPA)
- Air Traffic Control Procedures and Separation Standards
- Air Traffic Operation and Management

Each of these systems are discussed separately in this chapter.

a. Aeronautical Information System (AIS)

(1) In our current environment, the National Flight Data Center (NFDC) is the central source within FAA to collect, validate, and disseminate operational flight data on the total National Airspace System (NAS). As such, it serves as the single government source for dissemination of flight information to civil and government producers of charts and related publications.

(2) Aeronautical information is contained in five subsystems within the NFDC automated data base: (1) Airspace, (2) Airports, (3) Airway/Routes, (4) Facilities, and (5) Flight Procedures.

(3) The output of the NFDC system is arranged around three cycles of production: daily, quarterly, and semi-annual reports. The users of these reports and publications include the military, other government agencies, cartographers, and aeronautical chart producers.

(4) System users include the NFDC and other authorized government agencies and private companies with interests in aeronautical data.

(5) Certain categories of aeronautical information take form in many diverse configurations and formats in order to satisfy the needs of the collector, the utility of the processing maintenance function, and the requirements of the user. Currently, the throughput of information from the source to the ultimate user is

manual and labor-intensive. New or changed information is manually entered into the AIS a minimum of three times. By reformatting the initial entry of data and interfacing the automated systems presently processing the data, two entry functions can be eliminated in the dissemination process.

b. Obstruction Evaluation and Airport Airspace Analysis (OE and AAA) and Instrument Approach Procedures Automation (IAPA)

(1) The Aviation Standards National Field Office, the Office of Flight Operations, Air Traffic, the Department of Defense, and industry participate in the development and publication of Instrument Flight Procedures. The Instrument Approach Procedures Automation (IAPA) is an effective tool in that process and is scheduled to be upgraded to improve support for this function.

(2) Air Traffic, Airports, Airway Facilities, and Flight Standards are required by policy to participate in the airspace evaluation function and are directed to be responsive to notices of proposed construction within prescribed time frames.

(3) Obstruction Evaluation/Airport Airspace Analysis programs involve approximately 16,000 cases annually. Ninety percent of these cases are determined not to require Notice or do not exceed obstruction standards. These determinations often involve substantial issues asserted by Federal, state, and municipal governments as well as corporations and private individuals.

(4) Obstruction Evaluations/Airport Airspace Analyses are labor-intensive. Nearly every function involved in performing obstruction evaluation on proposed construction is performed in a manual mode today. The same is true for nonrulemaking airspace studies conducted with every proposal of runway or airport construction and for navigational aid installations. Each task item requires a significant amount of research which is time-consuming and subject to oversights and inaccuracies. A review of this function and related time requirements indicate that approximately 75 percent of the job could be assisted by automation.

c. Air Traffic Control Procedures and Separation Standards

(1) Today, air traffic control procedures and separation standards are developed or changed based on recommendations from a variety of sources or are the result of new technology or equipment. Initially, the proposed procedure or standard may be tested through a model, controlled test environment at a test center, or live field tests. The final processing of any new procedure or standard is a manual process which is accomplished without the aid of a centralized data base. This manual process involves gathering data from various agencies and researching historical files to obtain all available information on related procedures or standards. The required information is usually stored in an ordinary, administrative manual filing system. The major deficiency is that a lot of time is spent reviewing correspondence to ensure all relevant data is found. This process is not only time-consuming, it is susceptible to inadvertent oversight of pertinent information, and, to some extent, the final product is dependent on the thoroughness of the individual working the project.

(2) Manual processing of procedures and standards sometimes causes long lead times for finalizing a recommendation or may result in publishing a new procedure or standard which is in conflict with one currently in use. A complete data base on each air traffic control procedure or standard would expedite adoption of any change in these items and provide a total data base for future changes.

d. Air Traffic Operation and Management

(1) The current environment consists of data covering traffic count and projections, status of the NAS, and operational problems including unsatisfactory condition reports, system errors, delays, etc. Traffic count and operational problem data generally originate at the field level in manual form and are, with few exceptions, only automated after the data reaches the FAA Headquarters level. Regional access to summary traffic count data is made available through a timesharing system. Operational problem data is not generally available to regional or field elements except through manual systems. Traffic forecasts are developed at the Headquarters level using air traffic activity data in automated systems. NAS status data are generated through a variety of systems.

(2) In addition to the types of NAS data that originate within the Development and Logistics organization, air traffic organizations feed delay, staffing, and other data which affect NAS system status to FAA Headquarters. Although certain types of these data are communicated electronically to Headquarters, no automated storage, retention, and retrieval capability exists.

(3) The major deficiency is that these systems are not readily available to other offices within Headquarters,

regions, or field facilities. For the most part, the systems are fragmented, manually input and updated, duplicative, and restricted to the office which controls input.

401. LONG TERM GOALS

a. Aeronautical Information System

(1) **Goals.** This plan calls for the development of a comprehensive information system which will support information requirements for operation in the NAS and operation of the ATC system. The system will support management and administrative requirements on the utilization, operations problems, conditions, and status of the ATC system which will provide information on resource utilization and availability to the decision-maker.

(2) **Scope of Data Base.** This data base consists of the physical, operational, and functional descriptions of all U.S. civil airports, navigational aids, air/ground communications, flight service stations, air traffic control towers, air route traffic control centers, approach/departure control services, airways/routes, special routes, military training routes, noncompulsory radio fixes, holding patterns, standard arrival routes, standard instrument departure routes, and standard instrument approach procedures. Data input will be decentralized and originate from the field site which initiates a condition report that is abnormal or contrary to the published status.

(3) **Functions to be Supported.** The AIS will contain aeronautical data required to support the basic function of production of aeronautical charts flight information publications for operating in the system, ATC handbooks, directives, and data for operation of the ATC system.

(4) **Access to System.** Access to the operation of the ATC information system will be through a distributive communications network to operational facilities. The normal mode of operation will be to refresh distributive data bases as status changes occur. Access to management and administrative activities will be from operating locations in the agency having a requirement for information on the components or the NAS. Access to automated systems such as Instrument Approach Procedures Automation (IAPA) and automated aeronautical chart production will be by direct transfer of data from the AIS to the supporting automated system.

(5) **Interfaces.** The system will interface with the Flight Service Automation System, IAPA, Defense Mapping and Aeronautical Charting (DMAAC), and the air route traffic control center and air traffic control tower automation efforts.

b. Obstruction Evaluation and Airport Airspace Analysis (OE and AAA) and Instrument Approach Procedures Automation (IAPA)

(1) **Goals.** The goal of the Obstruction Evaluation and Airport Airspace Analysis automated system is to provide an automated screening process that will iden-

tify those studies requiring complete analysis, with reference to each notice of proposed construction and to all landing area proposals and nonfederal navigational aid proposals. In the IAPA projects, the goals are to automate the process of producing instrument flight procedures, to add new data elements in the flight inspection data base, to incorporate a scheduling record for instrument approach procedure reviews, and to provide improved management information.

(2) **Scope of Data Base.** The data base for Obstruction Evaluations and Airport Airspace Analysis will require minimum expansion of the data base as it currently exists for NFDC and IAPA. A working data base will be accessed from the IAPA data base with each task request. New data elements will be added to the IAPA system.

(3) **Functions to be Supported.** The following functions will be supported from this system:

- (a) National airport planning
- (b) Allocation and utilization of navigable airspace
- (c) Development of air traffic control plans and requirements
- (d) National and international flight information and air cartographic program
- (e) Safety programs
- (f) Development and standardization of flight procedures
- (g) NAS facilities maintenance and system protection

(4) **Access to System.** The primary responsibility for Obstruction Evaluation and Airport Airspace Analysis rests with regional and Washington Headquarters and airports district offices. These offices require daily access to the system. In addition, other offices tasked with planning and operations should also have access to the system as their needs dictate.

(5) **Interfaces.** This system will make use of existing interfaces with NFDC and IAPA. Also, interfaces will exist with Development and Logistics, Airports, and Aviation Standards program areas.

c. Air Traffic Control Procedures and Separation Standards

(1) **Goals.** The plan calls for establishing a data base on air traffic control procedures and separation standards which are used throughout the air traffic control system.

(2) **Scope of Data Base.** This data base will contain all pertinent information on procedures, standards, and related programs which are used within the ATC system. It will consolidate into a single source, information now found in numerous documents which are manually prepared and stored in various locations. More specifically, the data base will contain the procedures, standards and programs now contained in Federal Aviation Administration handbooks, orders, notices, and advisory circulars. Stored data will be annotated to cross-reference related or similar material found in any document which contains the information.

(3) **Functions to be Supported.** The data base will provide managers and air traffic control specialists with timely, accurate, and comprehensive information which they can use in decisions about any procedure, standard, or program.

(4) **Access to System.** Initially, data will be sorted into appropriate categories for manual input into the data base. The national headquarters will serve as the primary source of input data. Follow-on input will be automated and stored data manipulated to show the most recent revision or new input of any item. Output will be accessible to the operational level on request, but data will be safeguarded to prevent unauthorized manipulation of information.

(5) **Interfaces.** The data base may interface or integrate with data bases established by other offices. However, the extent of the interfaces will be determined after the data bases are sized by the individual services/offices within the FAA.

d. Air Traffic Operation and Management Information

(1) **Goals.** The goal of this system is to provide, in the most efficient manner possible, the information needed at all levels of air traffic management to support NAS decisionmaking. The project is focused on the near term actions needed to capitalize on existing systems, on capturing near term savings, and on capturing and preparing data that will be needed for the long term Aviation Activity systems.

(2) **Scope of Data Base.** The data base will include NAS system operational and status data, quality control data, air traffic system problem/resolution data, and a variety of policy and procedural criteria.

(3) **Functions to be Supported.** This system will be used on a real time basis for monitoring system status, and on a historical basis for both evaluating system management and for projecting future requirements and potential system difficulties. At the facility level, this system will be used to support or drive scheduling systems and for analysis of performance and productivity at the facility, unit, and individual levels. Crew scheduling, matching staffing to traffic flow, and projecting traffic or demand are a few of the applications needed. At the facility and/or regional office level, this system will support decisionmaking in airspace, sectorization, procedures analysis, training requirements, facility evaluation, and a variety of other areas which affect both productivity, efficiency, and safety. Headquarters level applications will follow similar patterns at higher levels of summarization and analysis.

(4) **Access to System.** Air traffic facilities, regional air traffic divisions, and Headquarters air traffic offices will have direct access.

(5) **Interfaces.** Achieving the objective of this system will require the establishment of an integrated data system that receives input from and provides output to all levels of the AT organization and a variety of

organizations outside of air traffic. This system must interact with the following systems: Office Automation, Aviation Activity, NAS Facilities, and Human Resources (PMIS).

402. INFORMATION SYSTEM EVOLUTION

a. Aeronautical Information System

(1) **Near Term (To 1985).** This period will see the upgrading and integration of all aeronautical information subsystems in the NFDC. Two integrated systems will evolve from the present Notice to Airmen (NOTAM), AIS, and test processing systems. This will require the total integration of all NOTAM data into the Consolidated NOTAM System (CNS) and the modification of the format and content of NOTAM messages. The second step will require an interface between the CNS and the Aeronautical Information System to automatically relay data in machine readable format for entry into the AIS. The third step will require an interface between the AIS and the text processing system to automatically relay data in machine readable format for text processing and dissemination.

(2) **Intermediate Term (To 1990).** This time frame is characterized by the expansion of data communications networks serving the separate operational and administrative requirements of the agency and the development of distributive data bases and information systems which will be accessible for input and retrieval from all operating locations. Projects will be undertaken to interface the ATC information system with the operational and administrative communications networks and data processing system. Initially, the ATC information systems will acquire the capability to interface with the Administrative Data Communications Network (ADCN) and the National Airspace Data Interchange Network (NADIN). The ATC distributed information system will consist of a unique regionally oriented data base containing aeronautical information and operational and management information. Each data base will be automatically updated to reflect changes in the master file. Access to the regional data base will provide the capability for both input and retrieval. The system will be used to support studies, analysis, planning, projections, and decisionmaking. The ATC information system will also interface with all air traffic control field facilities to provide national level adaptation data and access to aeronautical data unique to the area of responsibility of each field facility.

(3) **Long Term (To 2000).** During this period, there will be a major emphasis on developing inputs to the ATC information system that will reduce or eliminate manual intervention in updating data bases and will automatically disseminate changes to the operational status of the ATC system on a systemwide basis. The capability of automatically transmitting a change in status to a NAS facility will significantly reduce data collection time, human error in transcribing and

transmitting data and will standardize status reporting and conditions to the users of the NAS.

b. Obstruction Evaluation and Airport Airspace Analysis (OE and AAA) and Instrument Approach Procedures Automation (IAPA)

(1) **Near Term (To 1985).** In the near term, this plan recognizes the progress which currently exists with IAPA and the maintenance of the IAPA data base. In a general sense, this system will perform a reciprocal function to that of IAPA. IAPA performs an evaluation of a proposed Instrument Approach Procedure, giving consideration to other procedures, airports, and known obstacles. Obstruction Evaluation and Airport Airspace Analysis, on the other hand, evaluates a proposed obstruction or runway, giving consideration to known, anticipated, or planned airspace use and Instrument Approach Procedures. During this time-frame, planning, development of requirements, procurement of software contract, software development, testing, and acceptance will be accomplished.

(2) **Intermediate Term (To 1990).** Early in this time period, the development of Obstruction Evaluation and Airport Airspace Analysis will be completed. Training and initial operating phase can be concluded within a six month timeframe.

(3) **Long Term (To 2000).** Throughout this time period, workload backlogs will be depleted, and appropriate manpower reductions or consolidation of work will be accomplished.

c. Air Traffic Procedures and Separation Standards

(1) **Near Term (To 1985).** The primary emphasis will be on selecting and categorizing data for the data bank. Decisions on what and how the information should be stored will take place. All data will be carefully screened to ensure it is appropriately referenced to other relevant data or documents. Data selected for storage will be put into the computer. Toward the end of this period, the first output products will be available.

(2) **Intermediate Term (To 1990).** A major effort will be underway to input all required data, manipulate it into the format desired, and ensure it is accurate and comprehensive. Additionally, text output of stored data will be accessible and available to all locations. Based on the first outputs, refinement of the system will be accomplished. Terminals will be available at regional headquarters and selected field facilities to permit interfacing with Washington Headquarters.

(3) **Long Term (To 2000).** By 1990, the total system will be operational.

d. Air Traffic Operation and Management Information

(1) **Near Term (To 1985).** During this phase, a manual interface between NAS and administrative computers will be developed. Access to existing Operational Error/Unsatisfactory Condition Report (UCR) and Facility Productivity/Efficiency systems will

be extended to the regional level and below. The ATC Problem Analysis/Prediction System, which is currently under development, will be completed.

(2) **Intermediate Term (To 1990).** Building on the parallel office automation project and a baseline of access to existing systems, this project will evolve toward standardized data bases.

(3) **Long Term (To 2000).** The data base will continue to be integrated with other common data bases throughout the agency.

403. RETURN ON THE INVESTMENT

a. Aeronautical Information System. Access to current aeronautical data will significantly reduce research time and will reduce or eliminate the maintenance of manual files. Human resources effectiveness will significantly increase due to a single data base for access and retrieval of operational data across all geographical boundaries, as well as across all operational services.

b. Obstruction Evaluation and Airport Airspace Analysis (OE and AAA) and Instrument Approach Procedures Automation (IAPA). It is anticipated that a considerable personnel savings will be achieved once this system becomes operational.

c. Air Traffic Control Procedures and Separation Standards. Overall, the agency will gain a comprehensive, accurate data base on ATC procedures and standards which will be accessible in a real time mode while reducing the time required to manually research all data on a given procedure or standard. This will speed up decisionmaking for management and increase the productivity of project officers.

d. Traffic Operation and Management. Since information will become automated at the source, there will be a marked reduction in intermediary handling, duplicate recording, and document distribution. Physical transmission of paper documents will be significantly reduced, as will corresponding mail costs.

Table 4.1 SUMMARY OF COSTS AND SAVINGS
(Dollars in Millions)

	1983	1985	1990	2000
Cumulative Savings	0.3	4.7	23.6	63.3
Cumulative Project Costs	1.3	3.8	6.2	6.5
Net	(1.0)	0.9	17.4	56.8
Discounted Cumulative Savings	0.3	4.0	15.8	28.3
Discounted Cumulative Project Costs	1.3	3.4	4.7	4.7
Discounted Net	(1.0)	0.6	11.1	23.6
Direct FTE Cumulative Savings	—	80	80	80

404. IMPACTS

a. Organizational

(1) **Aeronautical Information System.** The greatest impact will be the immediate availability of operational data to all users of the system, both government and the aviation community. Additionally, stand-alone systems will be replaced by a comprehensive, multifunctional, integrated information system with the inherent duplication reduced.

(2) **Obstruction Evaluation and Airport Airspace Analysis (OE and AAA) and Instrument Approach Procedures Automation (IAPA).** This system will provide air traffic with the capability of electronic recordkeeping, data search, application of criteria, and electronic distribution from a central location to other operation divisions. Case records can be distributed to other divisions for internal comments through direct electronic transfer. Divisional comments can be returned using the same method, thereby eliminating the manual handling of a majority of the currently required paperwork and reducing the amount of time wasted on analyzing cases that do not require study.

(3) **Air Traffic Control Procedures and Separation Standards.** This system will provide the capabilities for regional and operational field facility access to the data base. This will speed up the management decisionmaking process as well as increase productivity.

(4) **Air Traffic Operation and Management.** The system will contribute to the standardization and uniform application of traffic count, staffing workload, and related data bases throughout the agency by providing facility level input to the Aviation Activity Information area. Duplicate systems will be eliminated in favor of more comprehensive, integrated information systems.

b. Program

(1) **Aeronautical Information System.** As a result of the planned actions, all users of the system, both within government and the aviation community, will have immediate access to operational data. The system will provide a network to be used to update operational data bases at ATC facilities and other aeronautical data bases such as IAPA, National Ocean Service (Aeronautical Chart Automated Production) and Defense Mapping Agency—Aeronautical Center automated chart production.

(2) **Obstruction Evaluation and Airport Airspace Analysis (OE and AAA) and Instrument Approach Procedures Automation (IAPA).** This project will allow the agency to perform the function of Obstruction Evaluation and Airport Airspace Analysis within prescribed time limits and to accommodate growth without a corresponding growth in personnel. Specialists will be freed from repetitive, time-consuming chores.

(3) **Air Traffic Control Procedures and Separation Standards.** As a result of planned actions, the agency will have a comprehensive data base on air traffic control procedures and separation standards. This data will be available to everyone who needs the information for management decisions and to operational specialists who may be working on a new procedure or considering a change to existing procedures or standards.

(4) **Air Traffic Operation and Management.** The most significant impact of this project will be the availability, to all levels of management, of information necessary to improve decisionmaking, efficiency, and productivity. This system will create tools for evaluating the performance of individual managers.

405. SUMMARY OF CHANGES

a. Procedural

(1) **Aeronautical Information System.** This project provides regional, field, and ATC facilities access to current aeronautical data by distributing uniquely structured regionally oriented data bases that will be updated on a regular basis. The system will also provide a network to be used to update operational data bases at ATC facilities and other aeronautical data bases. The regional data base will be used as an aid in airport planning studies, frequency management and allocation, obstruction evaluation and airspace airports analysis, and related studies. Access to current aeronautical data will significantly reduce research time and will reduce or eliminate the maintenance of manual files. Access will also solve the problem of obsolescence of data brought about by charting and publication cycles and airport inspection reporting schedules. The establishment of the Source Data Entry System, providing direct data entry to the AIS Master File, will significantly reduce the duplication of keying information changes to NFDC.

(2) **Obstruction Evaluation and Airport Airspace Analysis (OE and AAA) and Instrument Approach Procedures Automation (IAPA).** This system will

provide Air Traffic with the capabilities of electronic recordkeeping, data search, application of criteria, and electronic distribution from a central location.

(3) **Air Traffic Control Procedures and Separation Standards.** The time to process changes or implement new procedures or standards will be significantly reduced since the manual researching for all required data, now located in various locations, will be centralized in a consolidated data base. Regional and operational field facilities will be able to access the data base to obtain information on the procedures in lieu of writing to Headquarters to obtain the information. This will reduce the workload in the field facilities, regional offices, and Headquarters.

(4) **Air Traffic Operation and Management.** This system will contribute to the standardization and uniform application of traffic count, staffing or workload, and other related data bases throughout the agency by providing facility level input to the Aviation Activity Information systems. Duplicate systems will be eliminated in favor of more comprehensive, integrated information systems.

b. Automated Data Processing (ADP)

(1) **Aeronautical Information System.** Stand-alone systems will be replaced by a comprehensive, multi-functional, integrated information system, thereby reducing duplication.

(2) **Obstruction Evaluation and Airport Airspace Analysis (OE and AAA) and Instrument Approach Procedures Automation (IAPA).** This area will utilize software applications that will closely parallel and augment those presently used for IAPA.

(3) **Air Traffic Control Procedures and Separation Standards.** Manual researching for all required data, now in various locations, will be centralized in a consolidated data base.

(4) **Air Traffic Operation and Management.** General purpose terminals will be used at Headquarters, regional, and selected field facilities. This system will provide interface capability between NAS automated facilities and administrative systems.

Section 2. PROJECTS SUMMARY

TABLE 4.2 PROJECT NAMES, SCHEDULES, RELATED AGENCY OBJECTIVES, AND OFFICE OF PRIMARY RESPONSIBILITY (OPR)

<i>Projects</i>	<i>Start</i>	<i>Completion</i>	<i>Related Agency Objectives</i>	<i>OPR</i>
Integrate All Aeronautical Information Subsystems in the National Flight Data Center (NFDC)	1983	1986	1, 4, 5	AAT
Obstruction Evaluation and Airport Airspace Analysis (OE and AAA)	1984	1986	1, 4, 5	AAT
Automated Air Traffic Control Procedures and Standards Processing	1983	1990	1, 4, 5	AAT
Air Traffic Facility Support Information System	1983	1986	1, 4, 5	AAT
Instrument Approach Procedures Automation (IAPA)	1984	1989	1, 4, 5	AVN
Aircraft Management Information System (AMIS)—IAPA Support	1983	1985	1, 4, 8	AVN
Aircraft Management Information System (AMIS)—Procedures Scheduling	1984	1984	1, 4, 8	AVN
Aircraft Management Information System (AMIS)—New Management Information	1984	1985	1, 4, 8	AVN

1. Maintain or Improve Current Levels of U.S. Aviation Safety
2. Prepare and Implement Programs in Support of the Agency's Human Relations Policy
3. Continue the FAA's Long Range Planning Program
4. Complete Implementation of the Management Organization and Establish the Systems and Procedures Needed to Assure Efficient Allocation of Human and Fiscal Resources
5. Aggressively Pursue Opportunities to Reduce, Eliminate, or Otherwise Improve the Agency's Regulatory Burden
6. Improve FAA's Preeminence as the World Aviation Authority
7. Continue and Expand the Agency Program for Employment and Advancement of Handicapped, Minorities, and Women Employees
8. Provide All Services of the FAA, Excluding the Airways Modernization Program, at a Cost Not Greater than the 1980 FAA Budget, Adjusted for Inflation

FIGURE 4.1 AGENCY OBJECTIVES FOR FY 1983

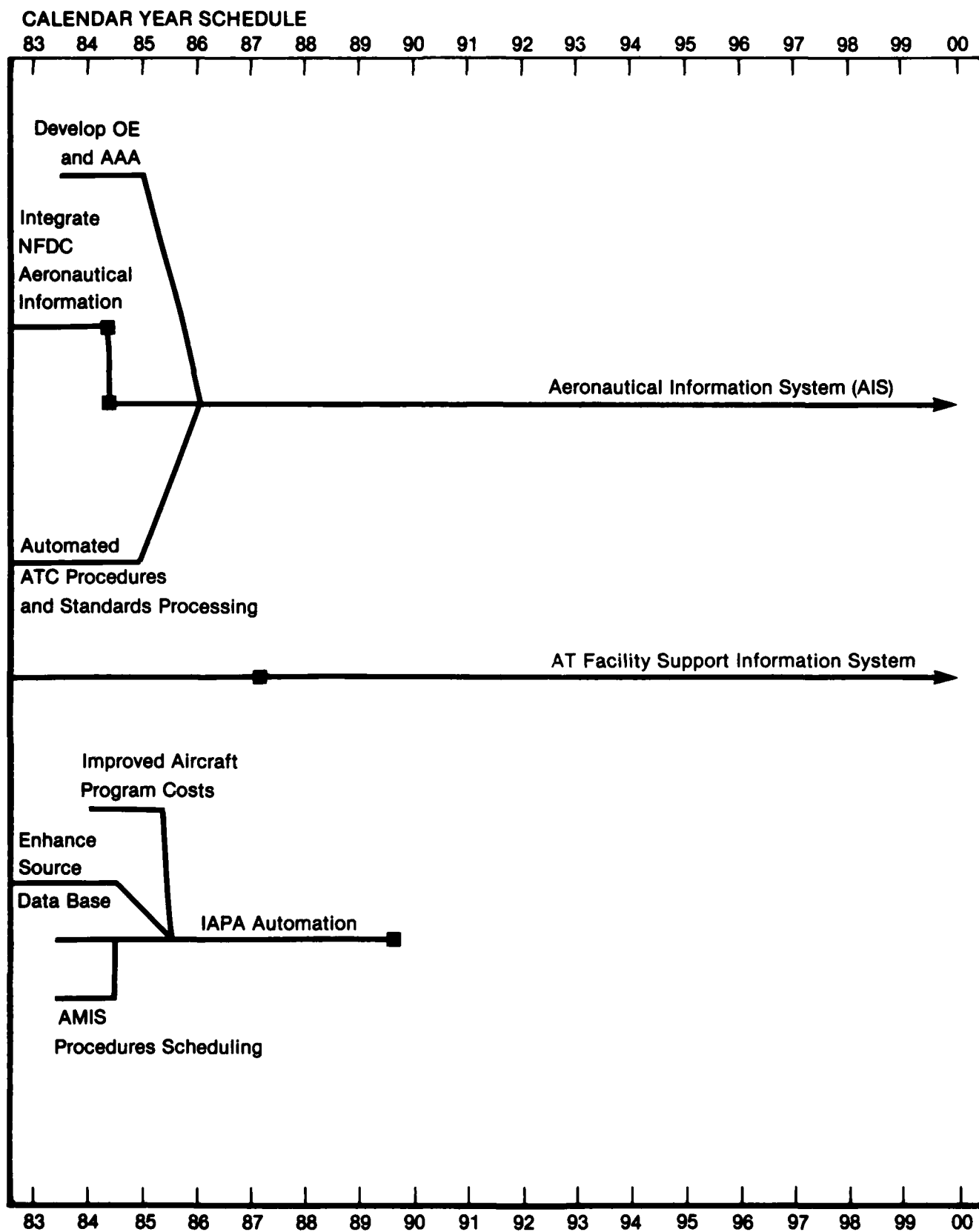


FIGURE 4.2 PROJECTS EVOLUTION

Section 3. SPECIFIC PROJECTS

406. PROJECT: Integrate All Aeronautical Information Subsystems in the National Flight Data Center (NFDC)

a. Purpose: To eliminate manual intervention and labor-intensive tasks of transferring and re-entering data from one subsystem to another in the processing and dissemination of aeronautical data.

b. Approach: Revise the present format and content of the initial NOTAM message to contain sufficient data to support the requirements of the Aeronautical Information System (AIS) data base. Modify the AIS software and input format to permit information received through the Consolidated NOTAM System (CNS) and Instrument Approach Procedures Automation. Structure the output of the AIS to be compatible with the requirements of the charting activities and the production of aeronautical information publications.

c. Equipment Requirements and Implications: The present general purpose terminals in use in the CNS, AIS, and text processing systems will support this project.

d. Schedule:

- | | |
|---|------|
| (1) Upgrade and integrate NOTAM data into the CNS | 1983 |
| (2) Interface between the CNS and AIS to automatically relay data in machine readable format for entry into the AIS | 1984 |
| (3) Interface between IAPA and AIS for two-way data exchange | 1985 |
| (4) Interface between AIS and text processing system to automatically relay data in machine readable format for text processing and dissemination | 1986 |

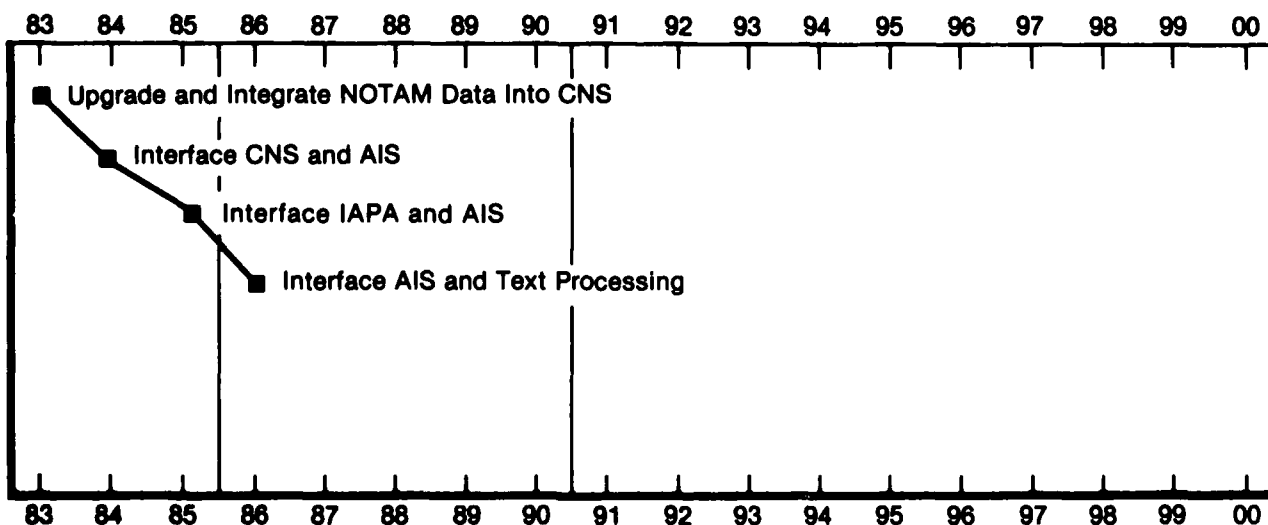
e. Related Projects and Activities: CNS, NAS Facilities Information System, and Office Automation and Management Support

f. Costs:

Dollars in Thousands

- | | |
|--|-----------|
| (1) Development costs (based on 1983 dollars) | \$401.1 |
| (2) Annual savings after complete implementation | (\$135.3) |

CALENDAR YEAR SCHEDULE



407. PROJECT: Obstruction Evaluation and Airport Airspace Analysis (OE and AAA)

a. Purpose: To provide a screening application of FAR Part 77 Surfaces and Terminal Instrument Procedures (TERPS) to automated analysis of proposed construction and landing area proposals under FAR Part 157. This project is closely associated with Instrument Approach Procedure Automation (IAPA). Each has a direct relationship with the other. The data base, which will be used by IAPA and/or NFDC, will satisfy the needs of this project. While IAPA is tailored toward processing Instrument Approach Procedures in respect to TERPS criteria, addressing known information on obstructions, obstacles, airports, etc., this project will evaluate a proposal of construction in relation to existing and planned procedures and will take into consideration items within the same data base.

b. Approach: By applying the criteria for both FAR Part 77 and TERPS and utilizing the given data base, all notices of proposed construction, proposed landing areas, and navigational aids will be analyzed. The result of the analysis will demonstrate any and all impacts as well as the margin of impact.

c. Equipment Requirements and Implications. General purpose terminals and printers will be required in

Headquarters, regional, and field offices having responsibility in this area. Each office would have one graphics terminal in addition to the number of general purpose terminals and printers that are commensurate with the workload. This includes the requirement for graphics terminals for Flight Inspection Field Offices and regional Flight Inspection Procedures Staffs.

d. Schedule:

(1) Planning, development of requirements, and procurement of software contract	1984
(2) Software development, testing, and acceptance	1985
(3) Training and initial operating phase concluded	1986
(4) Operational implementation	1986

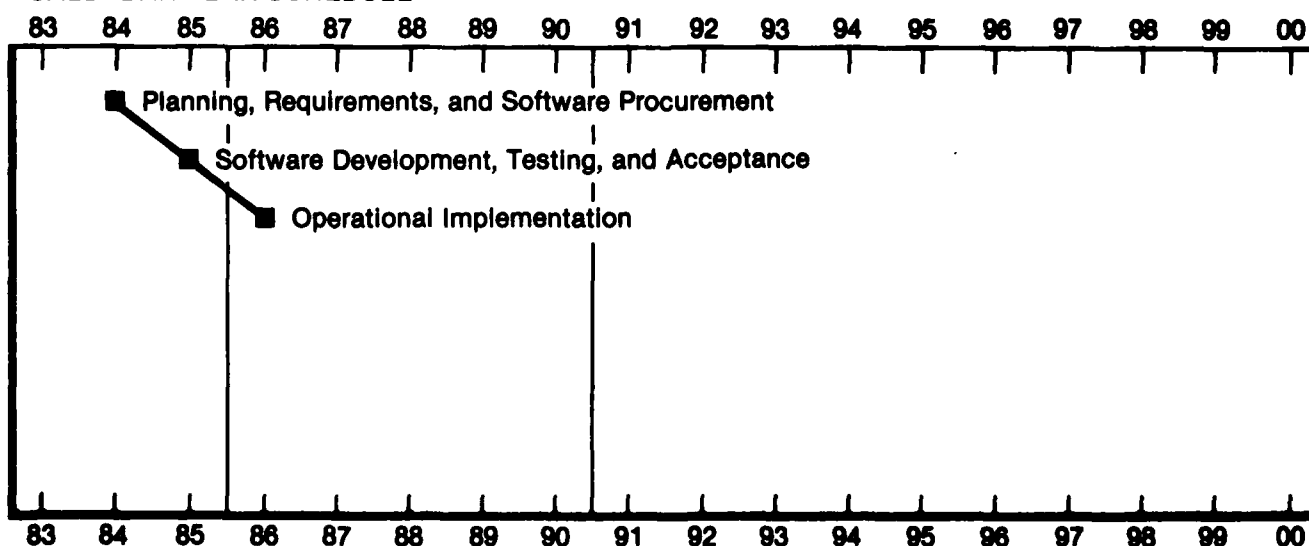
e. Related Projects and Activities: IAPA, Aeronautical Information System Network, and Office Automation and Management Support

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$185.1
(2) Annual savings after complete implementation	\$593.4

CALENDAR YEAR SCHEDULE



408. PROJECT: Automated Air Traffic Control Procedures and Standards Processing

a. Purpose: To replace the manual, time-consuming, labor-intensive methods of processing new or proposed changes to air traffic control procedures and separation standards with a consolidated, automated data base.

b. Approach: This project will be completed in two phases:

(1) Phase I will be completed by 1985. This phase consists of gathering, sorting, and categorizing the data for storage. Initial programming of the system will also take place during this time period.

(2) Phase II will be completed by 1990. This phase will consist of the final programming and inputting of information into the data base. Some manipulation of the data base and computer program changes can be anticipated in order to properly store the data into the system. Upon completion of this phase, computer print-outs or data displays of information will be available.

c. Equipment Requirements and Implication: General purpose terminals and printers must be available to field facilities, regional offices, and selected Headquarters offices.

d. Schedule:

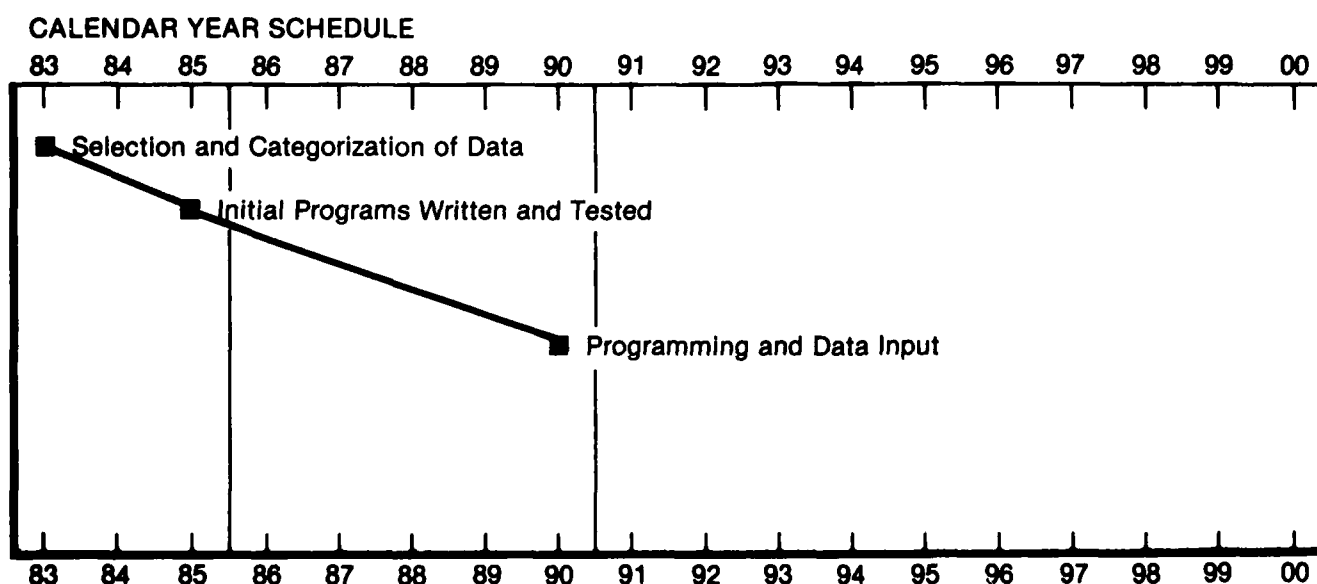
(1) Selection and categorization of data for the data bank	1983
(2) Initial programs written and tested	1985
(3) Programming and data input to the data base	1990

e. Related Projects and Activities: FAR Automated System, NFDC Text Processing System, and Office Automation and Management Support

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$199.3
(2) Annual savings after complete implementation	\$48.4



409. PROJECT: Air Traffic Facility Support Information System

a. Purpose: To allow for timely and efficient collection and dissemination of information and system analysis to all levels of air traffic management.

b. Approach:

- (1) Establish Headquarters project management
- (2) Capitalize on and streamline existing systems-extend access
- (3) Expand on current and proposed office automation programs to field facilities
- (4) Parallel user training
- (5) Increase management accountability with each development stage
- (6) Eliminate manual air traffic count and validation

c. Equipment Requirements and Implications: General purpose terminals and printers will be required at Headquarters, regional, and selected field offices. Interface capability between NAS automated facilities and administrative systems is required.

d. Schedule:

- | | |
|--|------|
| (1) Establish project management | 1983 |
| (2) Provide access to regional offices for operational error and UCR system | 1984 |
| (3) Extend access to regional offices and field facilities for production and efficiency | 1985 |
| (4) Modify NAS Automated Radar Terminal System (ARTS) software | 1986 |

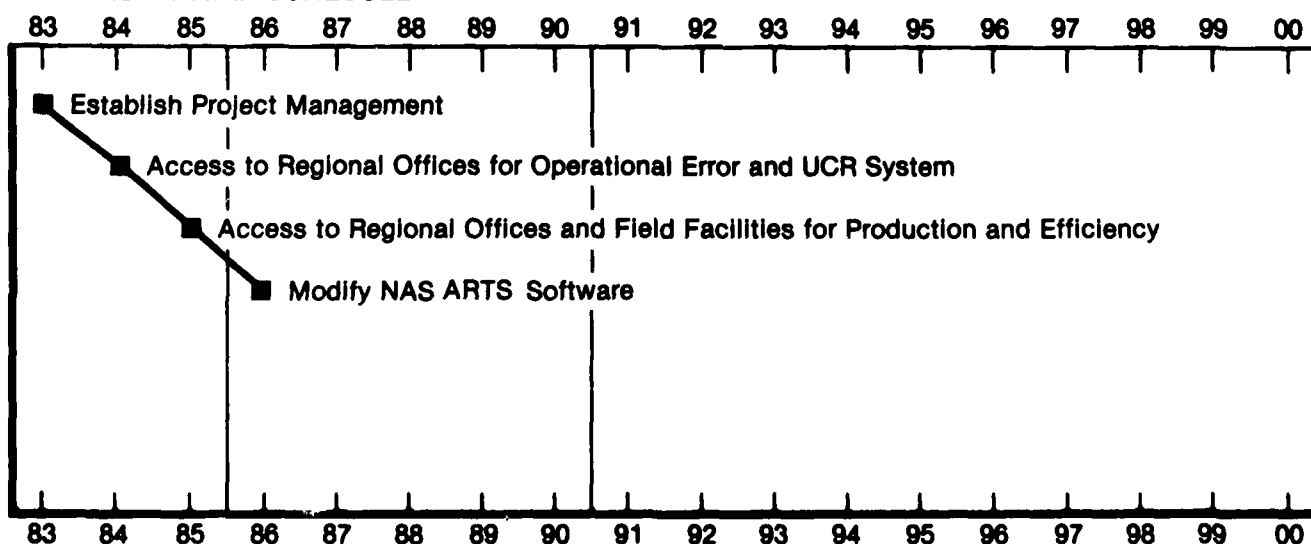
e. Related Projects and Activities: Office Automation Systems, Human and Financial Resources Information Systems, Air Traffic Computer Replacement Program, NADIN System, Aviation Activity Information System, and NAS Facilities Status Information

f. Costs:

Dollars in Thousands

- | | |
|--|-----------|
| (1) Development costs (based on 1983 dollars) | \$403.5 |
| (2) Annual savings after complete implementation | \$2,362.8 |

CALENDAR YEAR SCHEDULE



410. PROJECT: Instrument Approach Procedures Automation (IAPA)

a. Purpose: To complete automation of the process of producing Instrument Flight Procedures.

b. Approach: Finish installation of a partial capability system on existing hardware. Do a comprehensive sizing study after a five year trial of the limited system. Prepare final system specifications and implement the complete system on upgraded hardware.

c. Equipment Requirements and Implications: A dedicated processor with graph tablet I/O and remote terminals with graphic plotters will be required. The terminals in the Flight Inspection Field Offices and regional Flight Inspection Procedures Staffs will directly access OE/AAA and IAPA information.

d. Schedule:

(1) Complete hardware conversion and install a Data Base Management System (DBMS) 1984

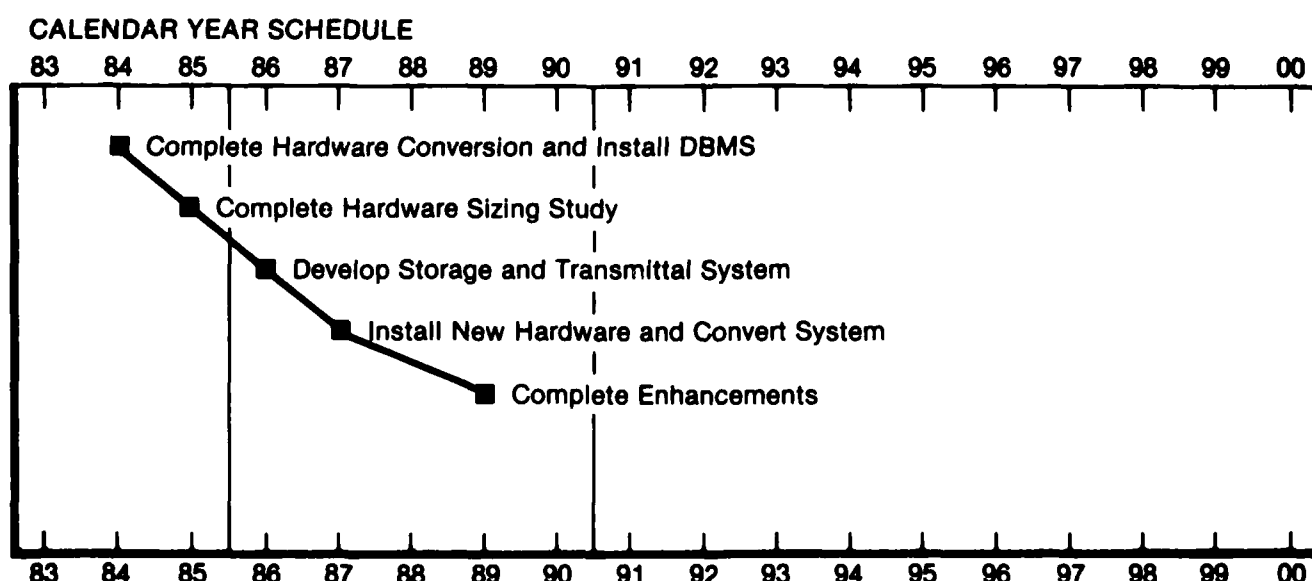
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|---|------|
| (2) Complete hardware sizing study | 1985 |
| (3) Develop storage and transmittal system | 1986 |
| (4) Install new hardware and convert system | 1987 |
| (5) Complete major system enhancements | 1989 |

e. Related Projects and Activities: Aeronautical Information System, Obstruction Evaluation and Airport Airspace Analysis, and Aircraft Management Information System (Flight Inspection).

f. Costs:

Dollars in Thousands

- | | |
|--|-----------|
| (1) Development costs (based on 1983 dollars) | \$4,707.7 |
| (2) Annual savings after complete implementation | |
| (a) Through 1990 | \$559.5 |
| (b) After new hardware | \$766.4 |



411. PROJECT: Aircraft Management Information System (AMIS)—IAPA Support

a. Purpose: To add the obstacle, fix, and holding area data to the flight inspection data base and to provide an effective data exchange mechanism with the IAPA system. This effort will reduce the manual research required to identify and chart many of the data elements associated with the production of instrument approach procedures. Additional benefits in the form of safety will also be obtained because no critical data element will be overlooked.

b. Approach: Design new file structures and programs to incorporate the new data elements in the flight inspection data base.

c. Equipment Requirements and Implications: None

d. Schedule:

(1) Requirements analysis	1983
(2) Specifications and trial implementation	1984
(3) Final programming and implementation	1985

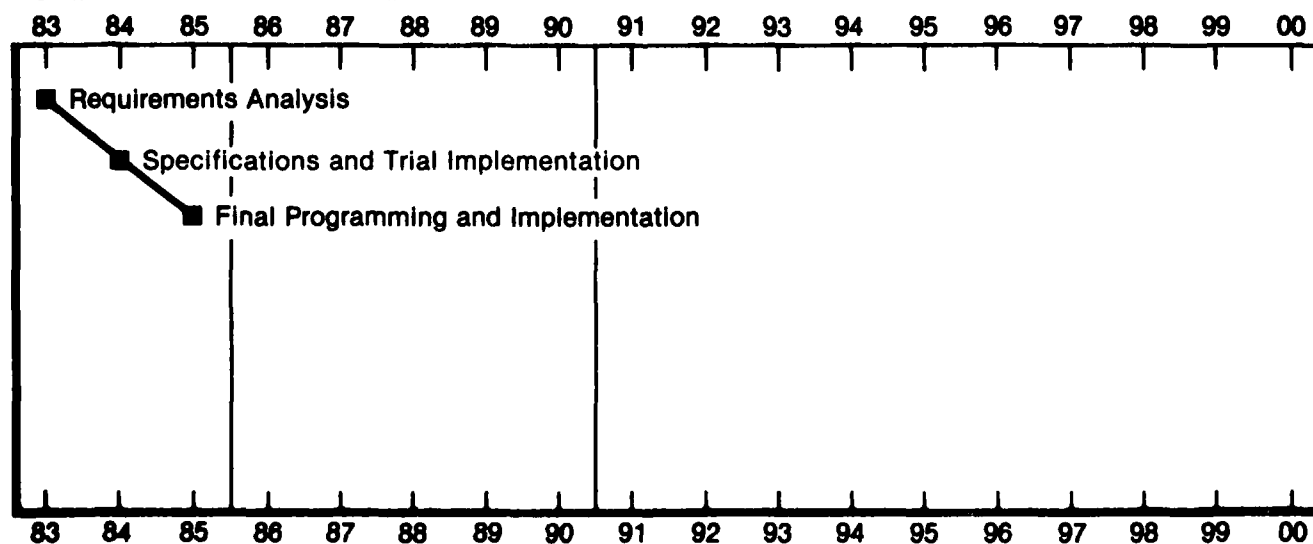
e. Related Projects and Activities: IAPA and NFDC expansion

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$371.7
(2) Annual savings after complete implementation	\$197.5

CALENDAR YEAR SCHEDULE



412. PROJECT: Aircraft Management Information System (AMIS)—Procedures Scheduling

a. Purpose: To incorporate a scheduling record for instrument approach procedure reviews. This program will eliminate most of the manual process now used to supplement the AMIS flight inspection scheduling program.

b. Approach: Expand the present flight inspection scheduling files to include instrument approach procedures.

c. Equipment Requirements and Implications: None

d. Schedule:

Complete effort

1984

e. Related Projects and Activities: IAPA, which will ultimately contain an expanded procedures scheduling process

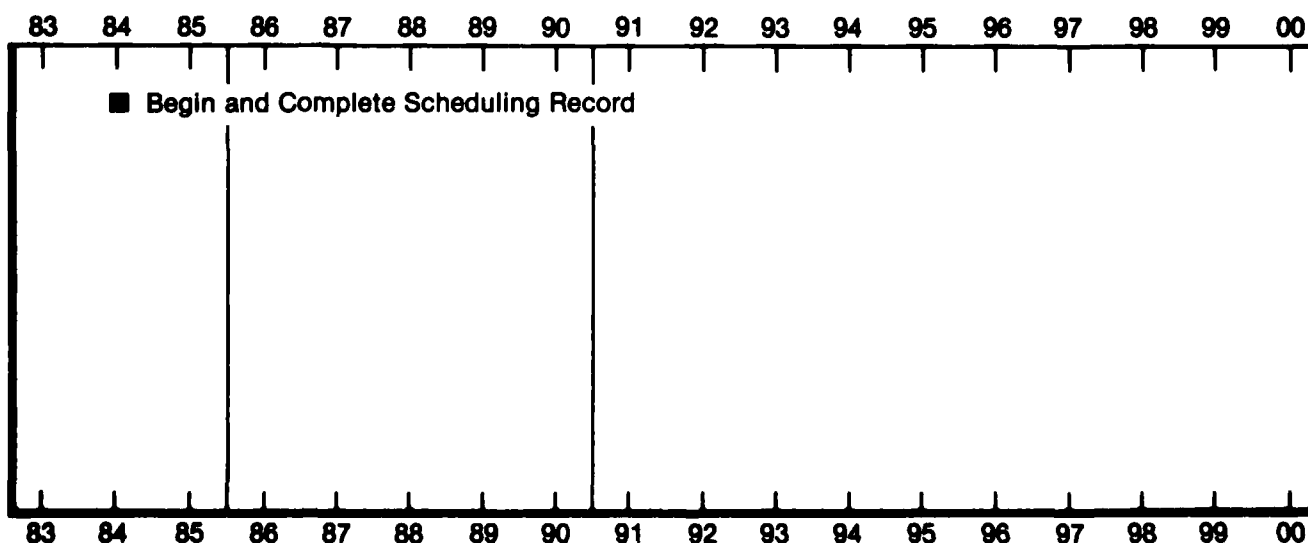
f. Costs:*Dollars in Thousands*

(1) Development costs (based on 1983 dollars)

\$65.8

(2) Annual savings after complete implementation

\$47.0

CALENDAR YEAR SCHEDULE

413. PROJECT: Aircraft Management Information System (AMIS)—New Management Information

a. Purpose: To provide improved summaries of Aircraft Program costs and accomplishments including limited graphical outputs.

b. Approach: Program and implement new data output routines from the AMIS data base.

c. Equipment Requirements and Implications: A graphic terminal/plotter will be required.

d. Schedule:

- | | |
|------------------------------------|------|
| (1) Analysis and specifications | 1984 |
| (2) Programming and implementation | 1985 |

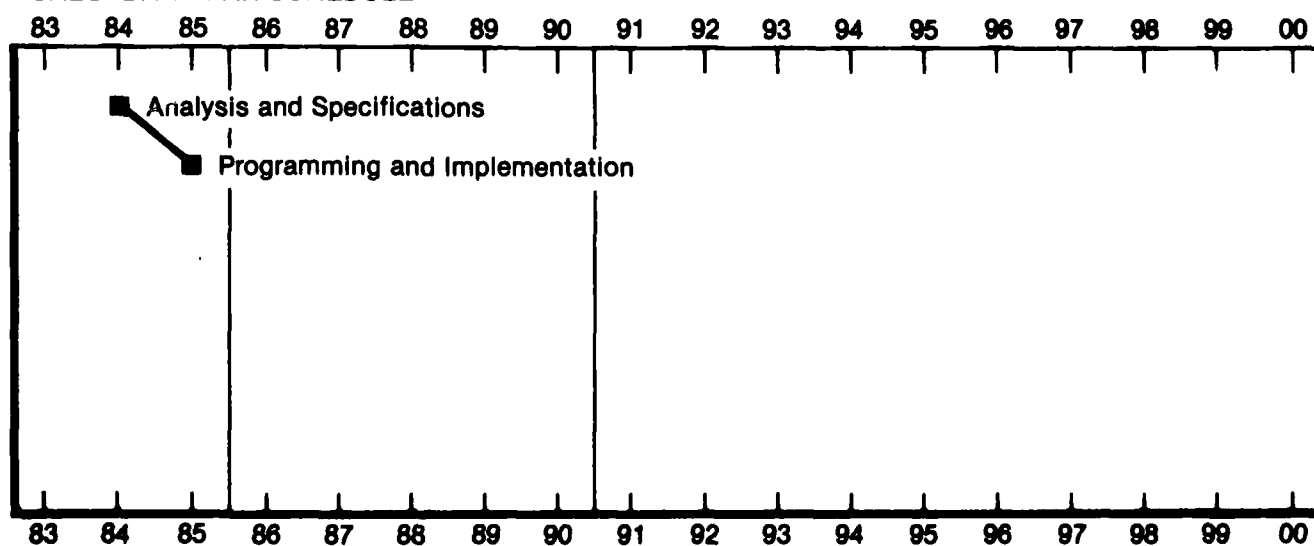
e. Related Projects and Activities: AMIS Resource Management

f. Costs:

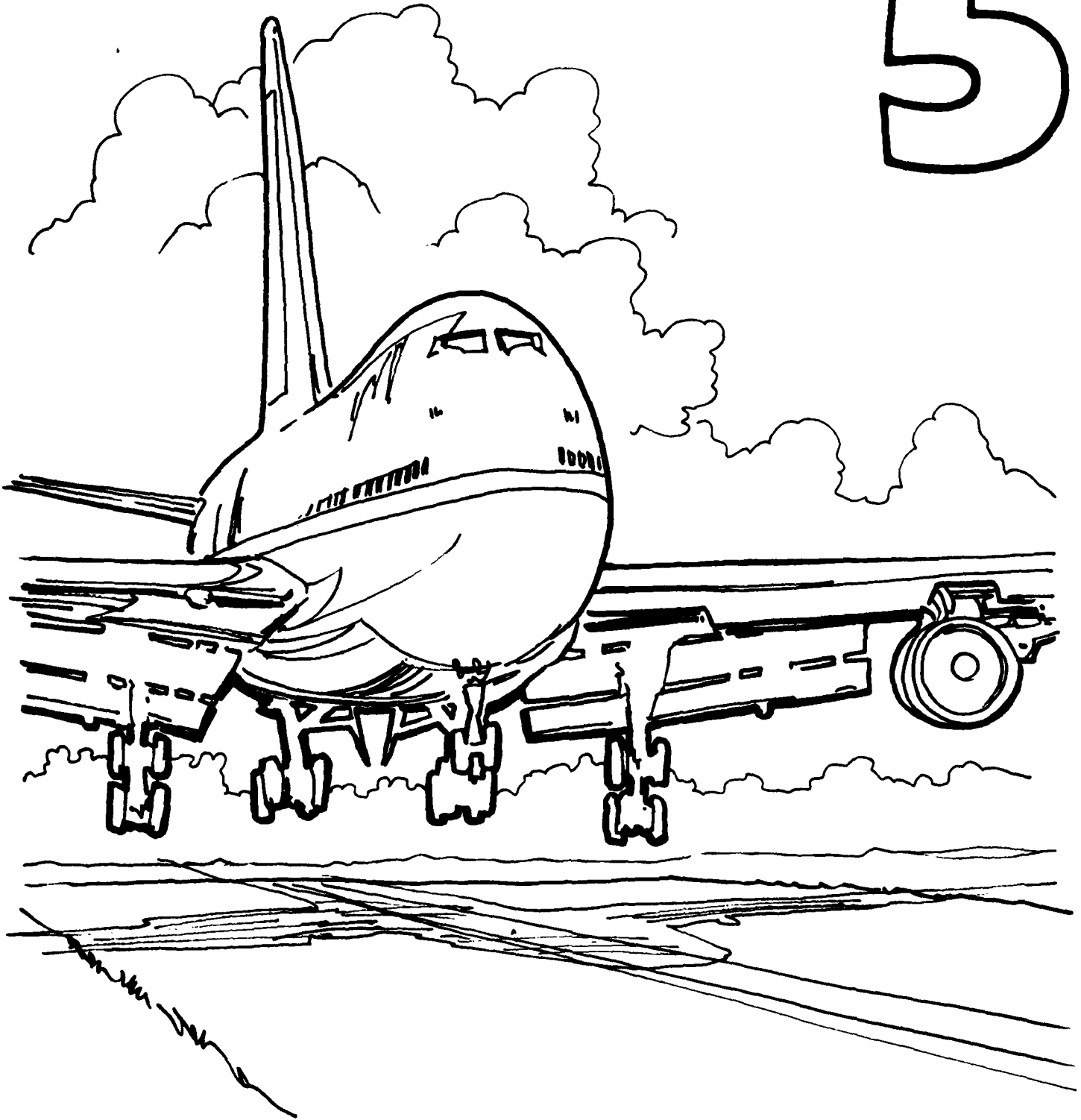
Dollars in Thousands

- | | |
|--|---------|
| (1) Development costs (based on 1983 dollars) | \$193.7 |
| (2) Annual savings after complete implementation | \$91.7 |

CALENDAR YEAR SCHEDULE



5



Aviation Activity Information Requirements

Chapter 5. AVIATION ACTIVITY INFORMATION REQUIREMENTS

Section 1. GENERAL

500. PRESENT ENVIRONMENT, PROBLEMS, AND DEFICIENCIES

Creating Aviation Activity Information does not represent an agency function, program, or system. Instead, Aviation Activity Information represents a collection of cooperative efforts by many in the agency to provide support to management. It is an integral part of each of the agency's functions and is required by management to properly develop, support, and coordinate most programs and plans of the agency.

a. Aviation Activity Information in today's environment may be viewed as consisting of two broad information areas: (1) an activity and environment area and (2) an agency operations area. The activity and environment area consists of four groups of information that are obtained from external sources of the agency. These groups of information are air transportation, aircraft, airmen, and airports information. The agency operations area consists of information generated from internal sources, including air traffic and a collection of other information used in measuring performance and operations. This collection consists of Human Resources, Materiel Resources, Financial Resources, and National Airspace System (NAS) Facilities Information. For each group of information, data include inventory, activity, and capacity—not only for the present but for the past and future.

b. The problems and deficiencies presented below pertain to the total Aviation Activity Information area.

(1) The Aviation Activity Information area lacks program focus. Not only is no single organization in the agency accountable for Aviation Activity Information as an agency resource, there is no single source of knowledge within the agency for finding specific Aviation Activity Information. Therefore, to obtain information, it is necessary to follow different procedures, to talk with many different people, and to request support in an ad hoc manner.

(2) No systematic means exists within the agency to raise, define, evaluate, and resolve new or changing community requirements for Aviation Activity Information.

(3) Because there exists a large number of separate data bases and mini-systems in the agency that contain information on aviation activities, management is being supplied with information from inconsistent sources of questionable quality that is not easily differentiated from official FAA information.

(4) Operational systems managed as line functions and programs have no way of easily responding to and supporting the broader information needs of other agency elements and the aviation community.

(5) Sensitivity of knowing the original source of information is important in judging the results being presented to management. Lack of source knowledge results in duplicative, redundant, and sometimes conflicting information.

(6) There is no easy way of learning about the scope, content, or quality of Aviation Activity Information available within the agency.

(7) The aviation industry and the Government share many common aviation activity information needs. The lack of any organized method or procedure for addressing these common needs results in duplicate data collection and processing and an increased public reporting burden.

501. LONG TERM GOALS

This plan is based on three long term goals:

- Establishing and operating a National Aviation Activity Information Program. This program will provide the much needed single focus for managing Aviation Activity Information.
- Creating and distributing aviation and agency activity information to the agency and general public using improved, available systems of the agency. The goal of the operation shall be to produce high quality, timely statistical information that will be provided to the agency and public on an open and easily available access basis. If the original source data involves the Privacy Act or other government statutes, the program will not produce a product unless it incorporates protection according to the law.

- Coordinating Aviation Activity Information requirements of the agency and general public through user group activities to create a variety of public use statistics and products. The formation of agencywide user groups will be supported to establish the broader community requirements for information. The agency will respond to needs by restructuring the base statistical programs as necessary.

a. Scope of Data Base

(1) Activity and environment information will contain four data bases:

(a) The current air transportation information data base will be expanded to include carrier financial and origin/destination information in addition to the current passenger and cargo information. This data will be keyed to both airport and carrier so that access can be along either axis.

(b) The aircraft data base will include, among other data, numbers of aircraft and hours flown by aircraft type and by type of flying; general aviation avionics equipment by aircraft type, by state of based aircraft and by type of flying; estimates of fuel consumption; and general aviation hours flown by state and by various environmental factors.

(c) The airmen data base will contain data such as airmen certificate types, ratings, age, sex, pilot flight time by various categories, a medical history, and an airmen history.

(d) A source for reliable based aircraft counts will be developed in the airport activity area. This data will be available by some collection of aircraft types such as fixed-wing single engine piston, fixed-wing turboprop, and rotorcraft. Nontowered airport operations data will be developed and included in the data base. Other airport related data will be extracted from the air transportation and the air traffic activity data bases.

(2) Agency operations information will consist of two groups of information:

(a) Air traffic activity will contain all measures of activity at FAA traffic control facilities. This will include airport operations at all towered airports, instrument operations handled by each area control facility, and flight services provided by the consolidated flight service stations. Each of these activity measures will be collected and maintained by user categories such as air carrier, air taxi, general aviation, and military, and possibly by type of aircraft, i.e., fixed wing, jet, helicopter, etc.

(b) Other operations information will have data bases containing information extracted from the various operating systems on a periodic basis. Examples include payroll, accounting, real property, facility outage, and personnel data.

b. Functions to be Supported. Aviation Activity Information will be provided to support the following functions and programs:

(1) The management of FAA field organizations, including determining facility organization structure, facility level and classification, staffing and grade level requirements, and scheduling for efficient resource utilization.

(2) The identification and analyses of current and/or potential aviation safety problems. Specific programs in this area include accident and incident investigation, the Aircraft and Cabin Safety Program, the Human Factors Program, the Aviation Product Quality Assurance Program, the Security of Air Carriers and Airports, standards for the Flight Inspection Program, accident/incident cause factor analysis, the Airspace Utilization Program, the Occupational Environmental Health Program and Medical Research.

(3) The determination of the number, type, and size of air traffic control facilities, navigational, radar and communications facilities required to meet aviation growth demands as defined in the NAS Plan.

(4) The development of aviation regulations, programs, and policies. Specific programs in this area are: airmen medical standards and certification, rulemaking for Federal Aviation Regulations (FAR) certification, aircraft standards and certification, equipment criteria development, the review of the Code of Federal Regulations (CFR) compliance and requirements, the impact of regulatory reform on small business entities, market analysis, capacity and delay analysis, the Cost Recovery Program, energy and environmental impact analysis, and International Civil Aviation Organization (ICAO) reporting requirements.

(5) The improvement and development of airports; airport safety, compliance and certification; and airport planning.

c. Access to System. Easy access to this information is necessary for its effectiveness as a management tool. Field facilities, regions and centers, Headquarters offices and services, the National Transportation Safety Board, the public, and industry groups will have controlled access.

d. Interfaces. Due to the broad coverage of the Aviation Activity Information area and the requirements for Aviation Activity Information by a number of agency programs, this area will interface with nearly all of the other information groups described in this plan.

502. INFORMATION SYSTEM EVOLUTION

a. Near Term (To 1985). During this period, a review of needs for agency operations and activity and environmental data will be completed, statistical data base constructions will be defined, some statistical data bases will be implemented on available systems, single data bases will be established for some of the activity infor-

mation areas, and a prototype information management system will be developed.

b. Intermediate Term (To 1990). The remaining statistical data bases will be implemented on available systems, and a single entry point into the data bases will be established. The statistical data bases will be accessible to users who have a need for Aviation Activity Information through user-friendly interfaces. Standardization of data elements across activity and environment and agency operations systems will facilitate data retrieval and analysis. Also, during this time, Agency Operations System (AOS) and Activity and Environment System (AES) interfaces to the Information Management System (IMS) will be defined and implemented. Information areas will be adjusted to support new requirements resulting from implementation of the National Airspace System (NAS) Plan.

c. Long Term (To 2000). Adjustments to support implementation of the NAS Plan will be completed. Continued communitywide support will be encouraged through user groups to facilitate the identification of user requirements. The IMS will be refined to provide more sophisticated analysis capability. Online statistical and mathematical analyses of information from different statistical systems will be via direct data linkage.

503. RETURN ON INVESTMENT

Savings from this plan are associated with improving the efficiency of Aviation Activity Information systems, including the elimination of redundant systems, a reduction in labor hours spent searching for data sources, a reduction in the use of manual reports or documents, and the development of system interfaces among the activity and environment area and the agency operations area to facilitate data retrieval and analysis capability. There will be other savings that are difficult to quantify. These are savings resulting from improved management decisionmaking with respect to staffing and facility productivity improvements and from reduc-

tions in the accident and fatality rates due to the identification of potential safety problems and the allocation of resources to these problem areas. Also, it is expected that information obtained through this process will allow for optimization of the NAS through better traffic management and equipment acquisition. In addition, others in the private sector of the aviation community will benefit by having information available for better market research and analysis. State and local governments will have access to timely and reliable information to improve planning.

504. IMPACTS

a. Organizational.

(1) With the implementation of statistical data bases in the Aviation Activity Information area, program offices must be prepared to provide "snapshot" summary information from their operational systems on a periodic basis or allow access to their systems. However, this will actually result in a reduction in workload. Since there is presently no single system for these data, the program offices are required to provide numerous extracts of information to numerous users. It is expected that a minimum amount of resources will be required to provide data for a single informational area and that these activities will not interfere with on-going operational systems.

(2) Additional organizational impacts pertain to the formation of agencywide user groups to establish broad community requirements for Aviation Activity Information. These groups will consist of a cross section of personnel from the various program offices that have requirements for these data. These groups will be formed, will meet, and will be dissolved on an as needed basis.

b. Program. The implementation of projects described in the Aviation Activity Information area will provide more reliable and timely information for performing a number of agency program functions.

505. SUMMARY OF CHANGES

a. Procedural. Statistical information requirements will be identified and evaluated in a systematic manner through user group activities instead of the ad hoc way of today's environment. The implementation of the IMS will provide the means for users to obtain information about data sources, content, and quality in a readily useable fashion.

b. Automatic Data Processing (ADP). Single statistical systems in each of the information groups within the activity and environment area and the agency operations area will be established to replace the proliferation of systems that currently exist. Information from the operational systems to support the statistical systems will be obtained in a routine and orderly manner, on a periodic basis, and will not interfere with the day-to-day processes of the operational systems. Retrieval capability will be developed through user-friendly interfaces.

Table 5.1 SUMMARY OF COSTS AND SAVINGS
(Dollars in Million)

	1983	1985	1990	2000
Cumulative Savings	0.2	2.8	22.1	62.4
Cumulative Project Costs	0.5	5.0	7.9	7.9
Net	(0.3)	(2.2)	14.2	54.5
Discounted Cumulative Savings	0.2	2.5	14.4	27.1
Discounted Cumulative Project Costs	0.5	4.4	6.5	6.5
Discounted Net	(0.3)	(1.9)	7.9	20.6
Direct FTE Cumulative Savings	—	1	1	1

Section 2. PROJECTS SUMMARY

TABLE 5.2 PROJECT NAMES, SCHEDULES, RELATED AGENCY OBJECTIVES, AND OFFICE OF PRIMARY RESPONSIBILITY (OPR)

<i>Projects</i>	<i>Start</i>	<i>Completion</i>	<i>Related Agency Objectives</i>	<i>OPR</i>
Agency Operations System	1983	1987	1, 3, 4, 5, 8	AMS
Activity and Environment System	1983	1987	1, 3, 4, 5, 8	AMS
Information Management System	1983	1987	1, 3, 4, 5, 8	AMS

1. Maintain or Improve Current Levels of U.S. Aviation Safety
2. Prepare and Implement Programs in Support of the Agency's Human Relations Policy
3. Continue the FAA's Long Range Planning Program
4. Complete Implementation of the Management Organization and Establish the Systems and Procedures Needed to Assure Efficient Allocation of Human and Fiscal Resources
5. Aggressively Pursue Opportunities to Reduce, Eliminate, or Otherwise Improve the Agency's Regulatory Burden
6. Improve FAA's Preeminence as the World Aviation Authority
7. Continue and Expand the Agency Program for Employment and Advancement of Handicapped, Minorities, and Women Employees
8. Provide All Services of the FAA, Excluding the Airways Modernization Program, at a Cost Not Greater than the 1980 FAA Budget, Adjusted for Inflation

FIGURE 5.1 AGENCY OBJECTIVES FOR FY 1983

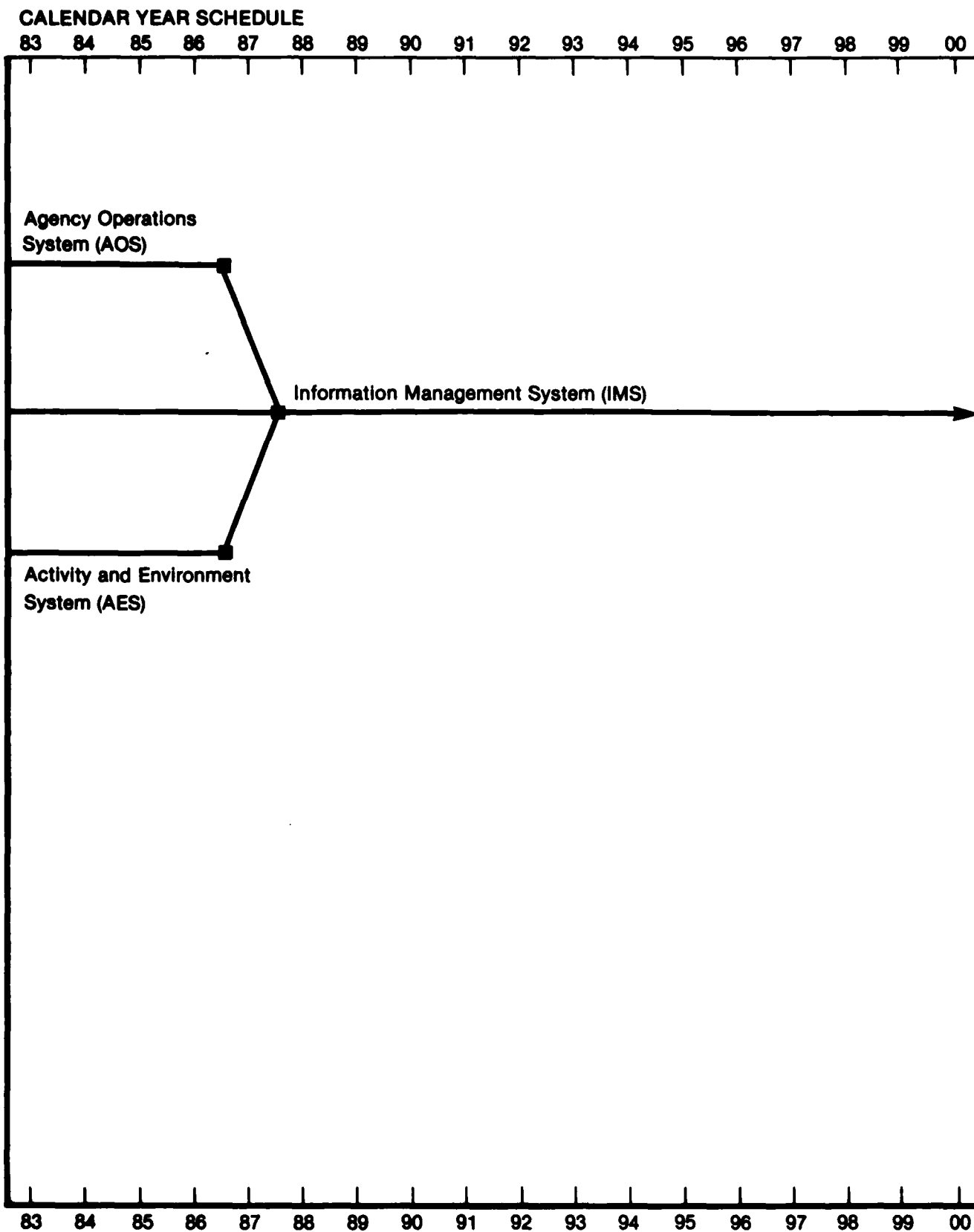


FIGURE 5.2 PROJECTS EVOLUTION

Section 3. SPECIFIC PROJECTS

506. PROJECT: Agency Operations System

a. Purpose: To provide the agency with a coherent, complete, and timely statistical information resource to aid management and analysts in understanding the operations activities of the agency.

b. Approach: The presently used statistical systems will be extended to include an interactive, data base retrieval capacity for use by knowledgeable programmers working in conjunction with a statistical staff. This extended capability will be integrated with structured retrieval capability developed through user-friendly interfaces for use by managers and analysts. Users will obtain results through the Information Management System.

c. Equipment Requirements and Implications. This project will use existing FAA computer capability.

d. Schedule:

(1) Complete review of requirements for agency operations information and establish the priorities for implementation of statistical data bases

1983—1984

(2) Define statistical data base constructions

1984—1986

(3) Implement statistical data bases on available systems

1984—1986

(4) Define the interface of the Agency Operations System with the Information Management System

1985—1987

(5) Implement the Agency Operations System and the Information Management System connection

1986—1987

e. Related Projects and Activities: This project will interface with the following information resources areas: Human Resources, Financial, Materiel, Air Traffic and Airspace, and NAS Facilities.

f. Costs:

Dollars in Thousands

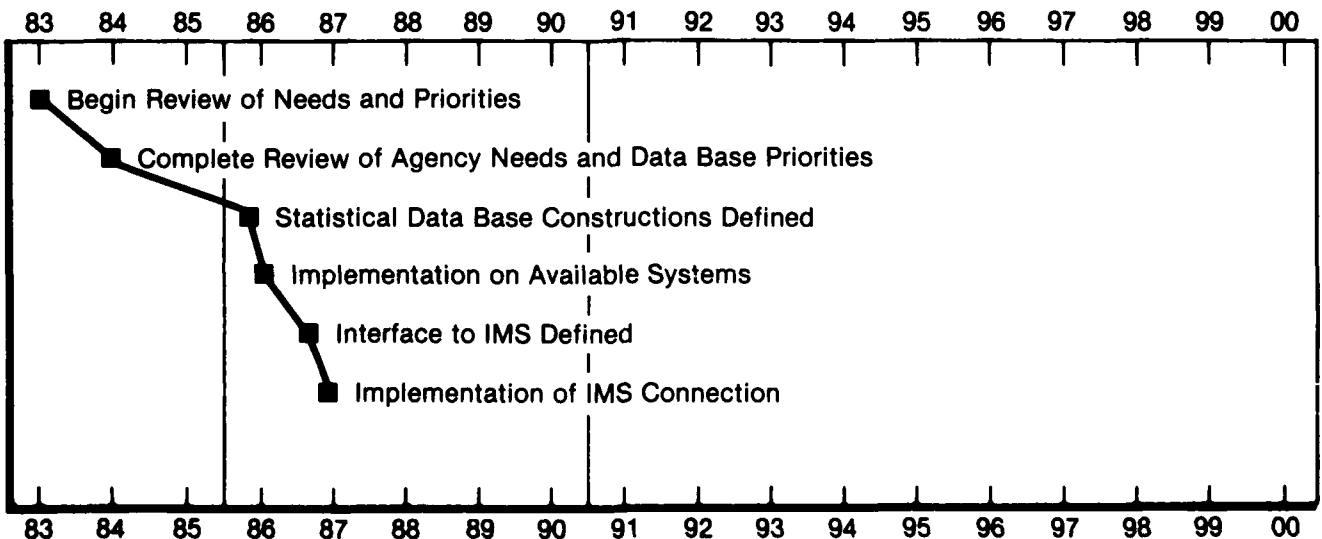
(1) Development costs (based on 1983 dollars)

\$2,523.7

(2) Annual savings after complete implementation

\$1,914.8

CALENDAR YEAR SCHEDULE



507. PROJECT: Activity and Environment System

a. Purpose: To provide the agency with a coherent, complete, and timely statistical information resource for use by management and analysts to understand the aviation activity and environment in the airspace.

b. Approach: The presently used statistical systems will be extended to include an interactive, data base retrieval capability for use by knowledgeable programmers working in conjunction with a statistical staff. New sources will be developed to replace lost Civil Aeronautics Board (CAB) data needed for agency requirements. The extended capability and new sources will be integrated with structured retrieval capability developed through user-friendly interfaces for use by managers and analysts. Users will obtain results through the Information Management System.

c. Equipment Requirements and Implications: This project will use existing FAA computer capability.

d. Schedule:

(1) Complete review of requirements for activity and environment information and establish priorities for implementation of statistical data bases 1983—1984

(2) Define statistical data base constructions 1984—1986

(3) Implement statistical data bases on available systems 1984—1986

(4) Define the interface of the Activity and Environment System with the Information Management System 1985—1987

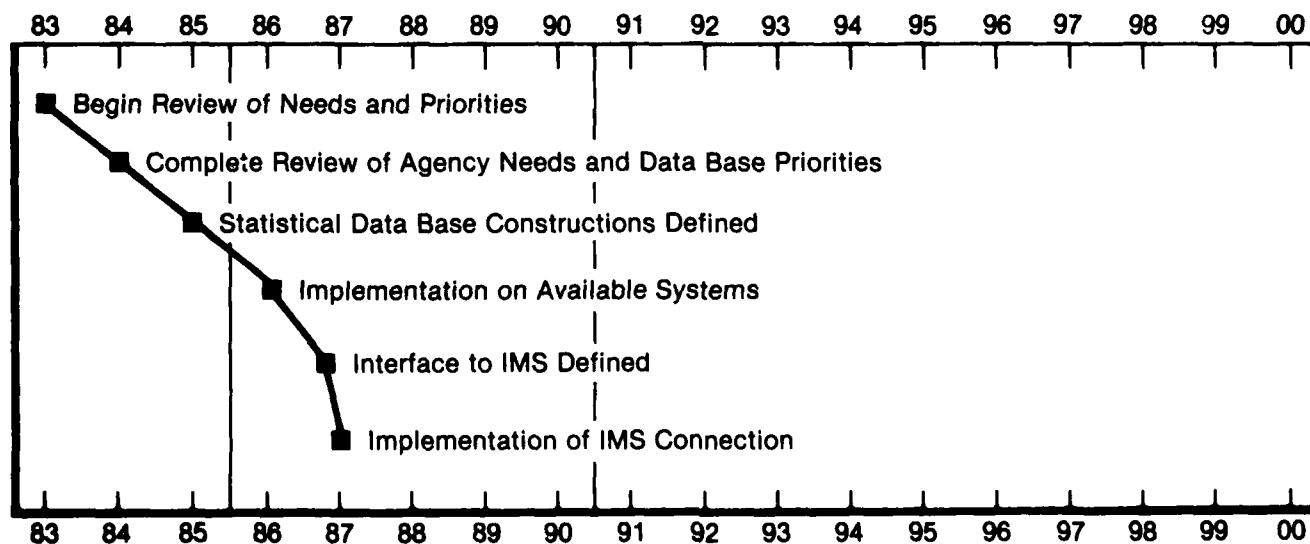
(5) Implement the Activity and Environment System and the Information Management System connection 1986—1987

e. Related Projects and Activities: This project will interface with the following information resources areas: Aviation Safety Analysis System, Airports, Air Traffic Control and Airspace, Materiel, and NAS Facilities.

f. Costs:*Dollars in Thousands*

(1) Development costs (based on 1983 dollars) \$2,691.3

(2) Annual savings after complete implementation \$814.9

CALENDAR YEAR SCHEDULE

508. PROJECT: Information Management System

a. Purpose: To provide users with a single entry point into the statistical information base of the agency through a user-friendly interface designed for use by managers, analysts, and clerical staff.

b. Approach: This system will be executed as a technology transfer project based upon Department of Energy funded research. Steps will include implementing experimental capability and developing FAA prototype software, demonstrating capability to users, developing final user requirements, writing technical specifications, developing the operational system, installing the system, and training users.

c. Equipment Requirements and Implications. This system will require a statistical data base to be available through a data base management system. It will also require some front end hardware and system interfaces with timesharing vendors to better manage timesharing costs.

d. Schedule:

- | | |
|--|-----------|
| (1) Review and write the technical specification for the Information Management System | 1983—1984 |
| (2) Perform, experiment, and develop a prototype Information Management System | 1983—1984 |
| (3) Revise technical specifications based on experience gained from the prototype system | 1984—1985 |
| (4) Operate the final Information Management System | 1986—1987 |

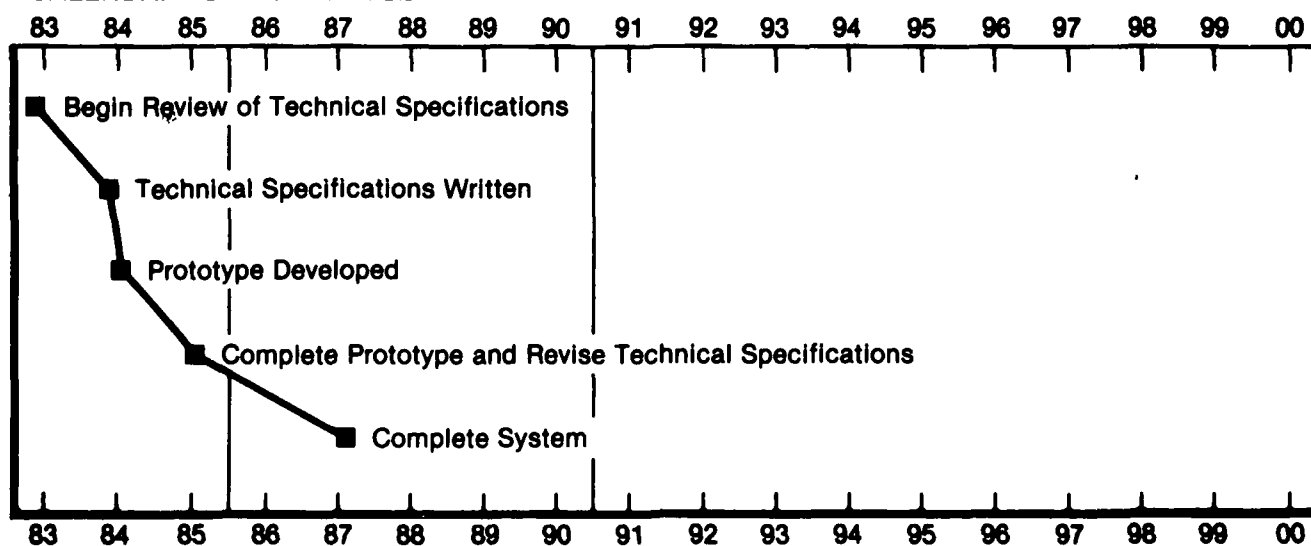
e. Related Projects and Activities: Agency Operations System and Activity and Environment System.

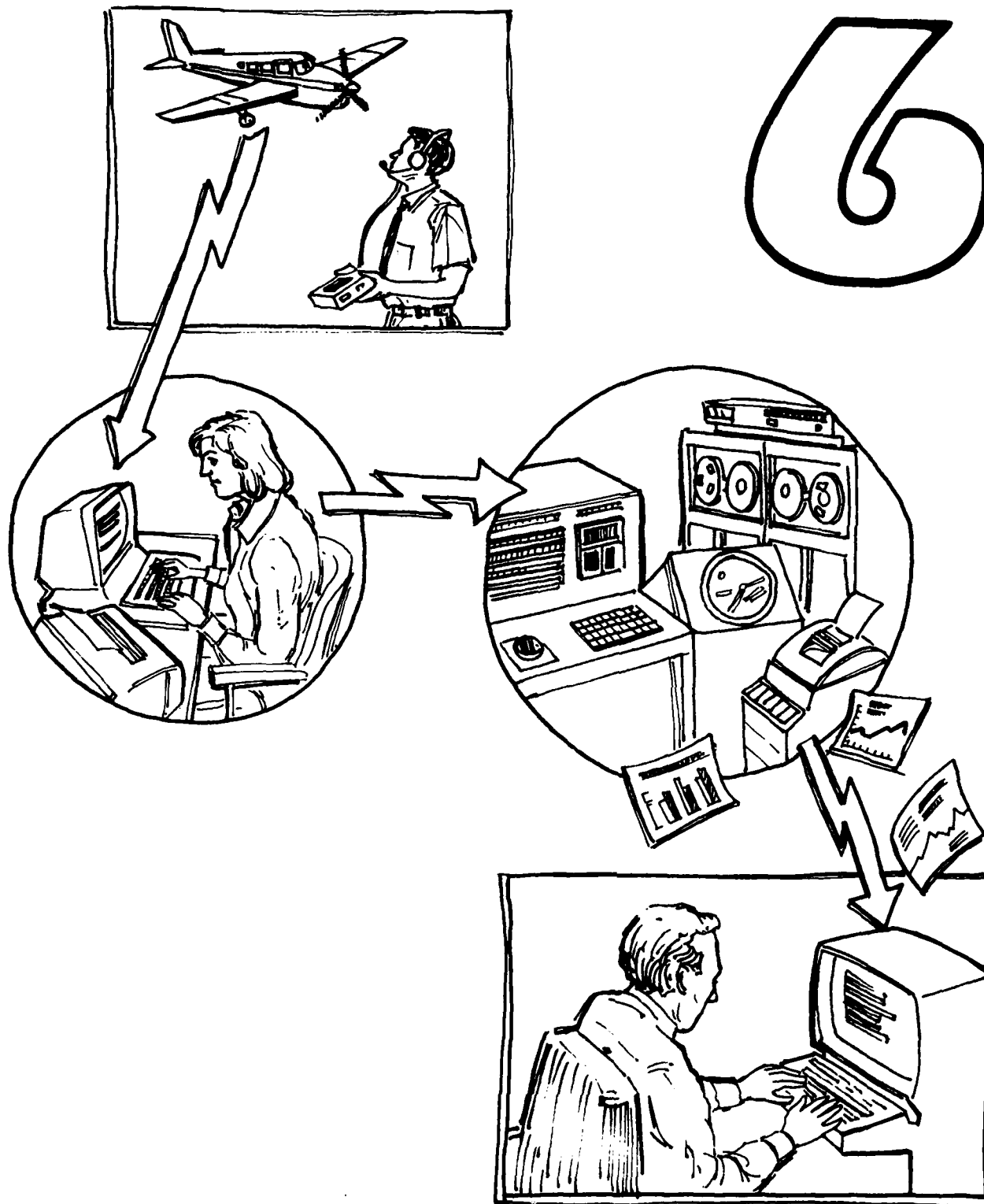
f. Costs:

Dollars in Thousands

- | | |
|--|-----------|
| (1) Development costs (based on 1983 dollars) | \$2,675.4 |
| (2) Annual savings after complete implementation | \$1,299.8 |

CALENDAR YEAR SCHEDULE





Aviation Safety Analysis System (ASAS) Information Requirements

Chapter 6. AVIATION SAFETY ANALYSIS SYSTEM (ASAS) INFORMATION REQUIREMENTS

Section 1. GENERAL

600. PRESENT ENVIRONMENT, PROBLEMS, AND DEFICIENCIES

The Federal Aviation Act of 1958 requires that the FAA certificate aircraft, airmen, air carriers, other operators, and air agencies. The Act also requires that the FAA survey and enforce the Federal Aviation Regulations to promote effective and safe aviation. These responsibilities from the Act fall under the missions of the Aviation Standards organization and its field counterpart divisions, including Flight Standards, Aviation Medical, Civil Aviation Security, and the Certificate Directorate Divisions.

a. The existing work environment for Aviation Standards is very large. There are over 225,000 active aircraft, approximately 800,000 active airmen, over 6,000 certificated air carriers and other operators, over 60,000 flight instructors, approximately 1,300 pilot schools, and more than 4,000 repair stations. These activities occur over a wide geographical area and are governed by nine regional offices and 200 field offices. Aviation Standards is assisted in fulfilling its responsibilities by over 16,000 persons and organizations from industry that have been designated to do work on behalf of the Administrator.

b. The expected growth in aviation over the next 20 years is significant. The National Airspace System (NAS) Plan projects the general aviation aircraft hours flown will double, helicopter operations will continue to grow at a high rate, the number of air carrier aircraft will increase by 42%, commuter aircraft will increase by 175%, and the general aviation aircraft fleet will increase by 94%.

c. The process of certification, surveillance, and enforcement requires the use of a large amount of information by the Aviation Standards work force. In today's environment this information exists in a number of independent data systems in a variety of different formats, languages, and data base management systems. For example, the Accident/Incident Data System, the Service Difficulty Report System, and the Enforcement Information System are all supported through the manual entry of data into a privately

operated commercial data system. Retrieval of data from these systems is through remote terminals in a timesharing mode utilizing resident commercial data base management systems. Other systems, such as Airworthiness Directives, Near Mid-Air Collisions, National Transportation Safety Board Recommendations, Aircraft Registry, and the Comprehensive Airmen Information System have been automated but are currently available only at the local level with limited retrieval flexibility. Still other systems, such as those containing information involving surveillance, inspections and audits of air agencies, and designees and examiners, are manual systems in which data are stored and maintained at the 200 Aviation Standards field offices located throughout the agency.

d. The systems which have been automated were designed and developed independently of each other at different times to satisfy specialized requirements. As a result, little consideration was given to the information requirements of other organizational elements within the agency. This approach has resulted in a number of fragmented data systems that contain nonstandardized data, have limited access, and do not satisfy the needs of all users. In addition, the data contained in these systems are not always current and lack the accuracy necessary to effectively meet the agency's program objectives.

e. The Aviation Standards organization initiated the development of the Aviation Safety Analysis System (ASAS) in late 1979 to provide an effective and timely mechanism for the collection, storage, dissemination, and analysis of data. The basic design philosophy of this system is to provide source level data entry through user-friendly computer terminals. Extensive help functions and local data editing will be provided in order to improve the accuracy and completeness of the entered information. A telecommunications network will link field offices to their parent regional office and eventually to a national FAA information processing facility. This approach is intended to provide field personnel and other agency organizational elements with improved access to more reliable and timely certification and safety information data and with the capability to retrieve and to conduct more effective analysis of potential safety issues.

601. LONG TERM GOALS

The long term goal of this plan is to develop and implement a cost-effective, fully integrated, comprehensive, and automated certification and safety information system that will meet the needs of all the organizational elements within the agency. The system will provide the capability of satisfying information needs, within the constraints of the relevant laws, to meet the growth in aviation contained in National Aviation System (NAS) forecasts; provide data support to identify potential safety issues; furnish management information to enhance employee utilization and productivity; provide the capability to respond more efficiently to internal and external information requests; and provide timely and accurate information which is easily accessible by users.

a. Scope of Data Base. The scope of the data bases included in this plan will contain certification and safety information involving airmen, aircraft, and the aviation system. Included will be information related to the certification of airmen, aircraft products, operators, air agencies, and safety information concerning aircraft accidents, incidents, results of investigations, surveillances, inspections, evaluations, audits, National Transportation Safety Board (NTSB) recommendations, accident prevention, alerts and bulletins, security, and aviation rulemaking and analysis. Other information, such as that derived from the Aviation Safety Reporting System (ASRS), will be available through external interface. The data bases will contain historical information to support trend and statistical analyses, as well as detailed information required to identify specific problems related to aircraft components or systems. In short, the data bases will be designed and developed to meet the data and information needs of the various elements within the agency. The information systems will be designed to permit direct access by users through user-friendly computer terminals. They will also incorporate the flexibility and capability to accommodate new data requirements of the future.

b. Functions to be Supported. The primary functions to be supported by this information plan include the certification of airmen, aircraft products, operators, air agencies, accident investigation, enforcement activities, security, inspections, surveillance, accident prevention, safety analyses, staffing and manpower utilization, research and development projects, and rulemaking activities.

c. Access to System. System access within the agency will be available to field, regional and center offices, certification directorates, Headquarters organizational elements, and the Aviation Standards National Field Office. External access will be available for aircraft manufacturers, suppliers, other aviation industry groups and various aviation safety organizations, if required. Also, the system will be designed to accom-

modate access by other government agencies, such as the NTSB and the National Air and Space Administration (NASA), as well as foreign governments.

d. Interfaces. Interfaces will be required to obtain airmen information from the Comprehensive Airmen Information System and aircraft information from the Aircraft Registry System. Data obtained from these two systems will be used to support data input at the field office sites. Interfacing with the Aviation Activity Information systems will be necessary to support analyses, determination of trends, and the identification of potential safety problems. Interfaces with the Aviation Safety Reporting System (ASRS), maintained by the National Air and Space Administration (NASA), will also be required to support and supplement analysis and special studies.

602. INFORMATION SYSTEM EVOLUTION

The design, development, and implementation of the data systems included in the Aviation Safety Analysis System (ASAS) will evolve in two phases—Mark I and Mark II. Mark I will include the Work Program Management System; Federal Aviation Regulations; Air Carrier Utilization System; Accident/Incident Data System; Enforcement Information System; Service Difficulty Report System; Comprehensive Airmen Information System; Designees; Aircraft Product Manufacturers, Air Agencies, and Air Operators; Air Transportation Analysis System; Health Information System; and the Medical Accident System. Mark II will include Airworthiness Directives; Aircraft Registry; Accident Prevention; Near Mid-Air Collisions; National Transportation Safety Board Recommendations; Civil Aviation Security; Certificate and Regulatory Archives; and the Aircraft Simulator Data System.

a. Near Term (to 1985). The procurement and installation of the Information Processing Equipment (IPE) at the field offices and corresponding training on the use of this equipment will be completed. Mark I systems will be completed and in operation. Systems included under Mark II will be under development.

b. Intermediate Term (to 1990). During this period, the design, development, and implementation of Mark II systems will be completed and in operation. All required internal and external interfaces will be operational. Access to data systems from within the agency at all appropriate levels will be completed, and external access will be available.

c. Long Term (To 2000). System enhancements necessary to satisfy new data requirements will be designed, developed, and implemented. An assessment of the functional efficiency and effectiveness of the system in meeting user needs from both within and outside the agency will be completed, and the appropriate revisions or modifications, if needed, will be implemented. New hardware and software enhancements,

including new statistical and mathematical subroutines and/or data management systems will be continuously reviewed for agency application. The capability of the system to meet the increase in aviation activity projected by the NAS forecast will be analyzed, and, if necessary, appropriate modifications will be designed and implemented.

603. RETURN ON THE INVESTMENT

As a result of this plan, the agency will be able to identify potential safety issues more effectively, to conduct timely and meaningful analyses, to meet certification responsibilities more effectively and efficiently, and to respond to information requests from Congress, other government agencies, the aviation community, the public, and from within the agency itself.

Table 6.1 SUMMARY OF COSTS AND SAVINGS
(Dollars in Millions)

	1983	1985	1990	2000
Cumulative Savings	4.7	27.6	95.8	246.8
Cumulative Project Costs	11.8	28.6	36.8	36.8
Net	(7.1)	(1.0)	59.0	210.0
Discounted Cumulative Savings	4.7	24.6	66.6	114.2
Discounted Cumulative Project Costs	11.8	26.8	32.6	32.6
Discounted Net	(7.1)	(2.2)	34.0	81.6
Direct FTE Cumulative Savings	96	237	310	310

604. IMPACTS

a. Organizational. Implementation of this plan will not significantly affect the Aviation Standards organizational structure.

b. Program. The availability of accurate and timely information at user sites will materially reduce the time

currently being expended in data processing, certification, analyses, and responding to requests for information. Data entry at the district office level by the use of audio recording equipment will reduce inspector administrative duties which will permit more time for surveillance, inspection, and monitoring activities, thereby permitting greater inspector productivity that will be necessary to meet future requirements. Internal processing of paperwork will be practically eliminated, and separate independent data systems will be phased out.

605. SUMMARY OF CHANGES

a. Procedural.

(1) Information will be stored and accessed from a single, consolidated system.

(2) Data will be entered and validated at the office level where it is collected or generated.

(3) Transfer of data will be accomplished electronically.

(4) Data will be directly accessible by users through user-friendly terminals.

(5) Fewer data bases will exist.

(6) No additional personnel will be required to process information between the source and the user.

(7) Data elements between data systems will be standardized.

(8) Data accuracy and timeliness will be vastly improved.

(9) The time required to respond to requests and to conduct studies and analysis will be reduced.

(10) Productivity and utilization of field inspectors will be improved.

b. Automated Data Processing (ADP).

(1) ADP processing will be decentralized.

(2) ADP processing and retrieval software will be standardized.

(3) Clerical functions will become more ADP oriented and will require additional technical skills.

Section 2. PROJECTS SUMMARY

TABLE 6.2 PROJECT NAMES, SCHEDULES, RELATED AGENCY OBJECTIVES, AND OFFICE OF PRIMARY RESPONSIBILITY (OPR)

<i>Projects</i>	<i>Start</i>	<i>Completion</i>	<i>Related Agency Objectives</i>	<i>OPR</i>
MARK I:				
Work Program Management System	1983	1984	1, 4, 5, 6, 8	ASF
Federal Aviation Regulations Automation	1983	1984	1, 4, 5, 6, 8	ASF
Air Carrier Utilization System	1983	1984	1, 4, 5, 6, 8	ASF
Accident/Incident Data System (AIDS)	1983	1984	1, 4, 5, 6, 8	ASF
Enforcement Information System (EIS)	1983	1984	1, 4, 5, 6, 8	ASF
Service Difficulty Reporting System (SDR)	1983	1984	1, 4, 5, 6, 8	ASF
Comprehensive Airmen Information System (CAIS)	1983	1984	1, 4, 5, 6, 8	ASF
Designees	1983	1984	1, 4, 5, 6, 8	ASF
Aircraft Aircraft Product Manufacturers, Air Agencies, and Air Operators	1983	1984	1, 4, 5, 6, 8	ASF
Air Transportation Analysis System (ATAS)	1983	1984	1, 4, 5, 6, 8	ASF
Medical Information Systems	1983	1984	1, 4, 5, 6, 8	ASF
MARK II:				
Airworthiness Directive System	1984	1986	1, 4, 5, 6, 8	ASF
Aircraft Registry	1985	1987	1, 4, 5, 6, 8	ASF
Accident Prevention	1984	1986	1, 4, 5, 6, 8	ASF
Near Mid-Air Collision (NMAC) System	1984	1986	1, 4, 5, 6, 8	ASF
NTSB Recommendation Information System	1985	1987	1, 4, 5, 6, 8	ASF
Simulator Approved System	1983	1985	1, 4, 5, 6, 8	ASF
Civil Aviation Security Data	1984	1985	1, 4, 5, 6, 8	ASF
Archives	1984	1987	1, 4, 5, 6, 8	ASF

1. Maintain or Improve Current Levels of U.S. Aviation Safety
2. Prepare and Implement Programs in Support of the Agency's Human Relations Policy
3. Continue the FAA's Long Range Planning Program
4. Complete Implementation of the Management Organization and Establish the Systems and Procedures Needed to Assure Efficient Allocation of Human and Fiscal Resources
5. Aggressively Pursue Opportunities to Reduce, Eliminate, or Otherwise Improve the Agency's Regulatory Burden
6. Improve FAA's Preeminence as the World Aviation Authority
7. Continue and Expand the Agency Program for Employment and Advancement of Handicapped, Minorities, and Women Employees
8. Provide All Services of the FAA, Excluding the Airways Modernization Program, at a Cost Not Greater than the 1980 FAA Budget, Adjusted for Inflation

FIGURE 6.1 AGENCY OBJECTIVES FOR FY 1983

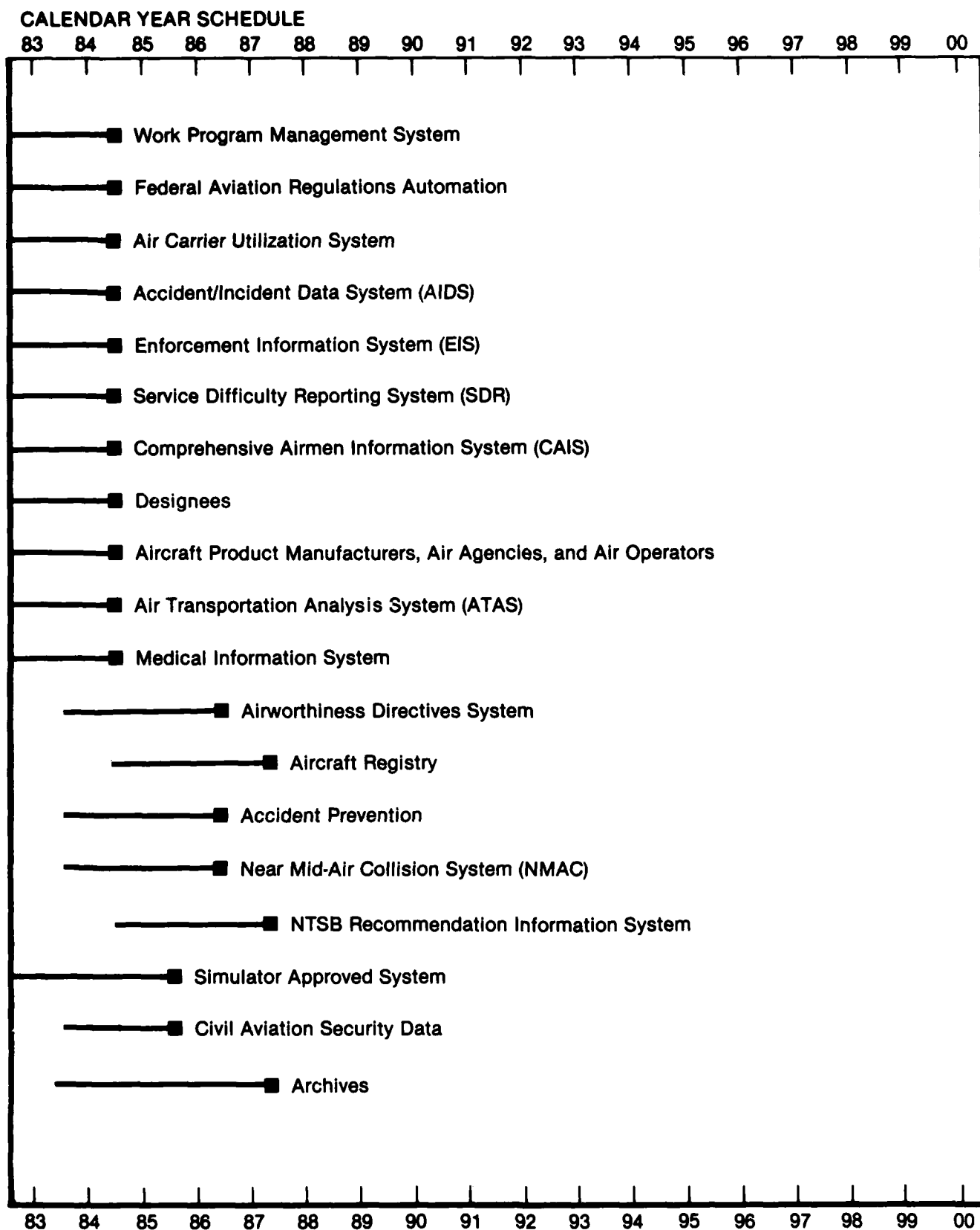


FIGURE 6.2 PROJECTS EVOLUTION

Section 3. SPECIFIC PROJECTS

606. PROJECT: Work Program Management System—Mark I

a. Purpose: To provide a method for field and regional offices to manage their resources. The information generated by this system will enable managers to plan, coordinate, and monitor their work program to achieve maximum utilization of resources. The system will also provide a vehicle for assessing proper allocation of resources to ensure that the agency's regulatory mission is fulfilled.

b. Approach: To develop an automated system at field offices utilizing information derived from functional program data which will reside on information processing equipment. The work program management system will be the core of the data system at the field offices and will also be used by regional offices to monitor their regulatory programs.

c. Equipment Requirements and Implications: Information processing equipment at the field and regional office levels will be used.

d. Schedule:

(1) Requirements analysis	1983
(2) System specification	1983
(3) Programming and testing	1984
(4) Review & evaluation	1984
(5) Conversion & implementation	1984

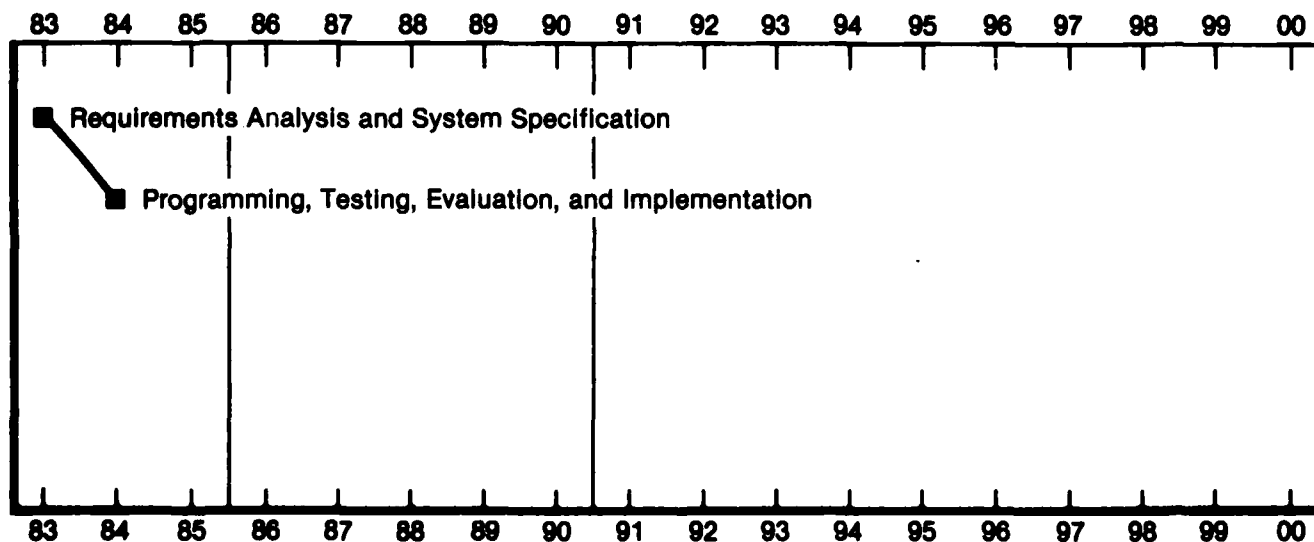
e. Related Projects and Activities: Designees, Air Agencies, Air Operators

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$1,938.5
(2) Annual savings after complete implementation	\$910.6

CALENDAR YEAR SCHEDULE



607. PROJECT: Federal Aviation Regulations Automation—Mark I

a. Purpose: To provide rapid word or string searches of the Federal Aviation Administration portion of the Code of Federal Regulations (Title 1, Chapter 1) and the means to display any of the current rules. An interface with the Federal Register will be developed to minimize the cost of publishing.

b. Approach: To develop the means to maintain a current copy of the CFR's. The prototype system will be upgraded for national use.

c. Equipment Requirements and Implications: A network of Field Office Modernization (FOM) terminals will be required.

d. Schedule:

(1) Requirements analysis	1983
(2) System specification	1983
(3) Programming and testing	1983
(4) Review & evaluation	1984
(5) Conversion & implementation	1984

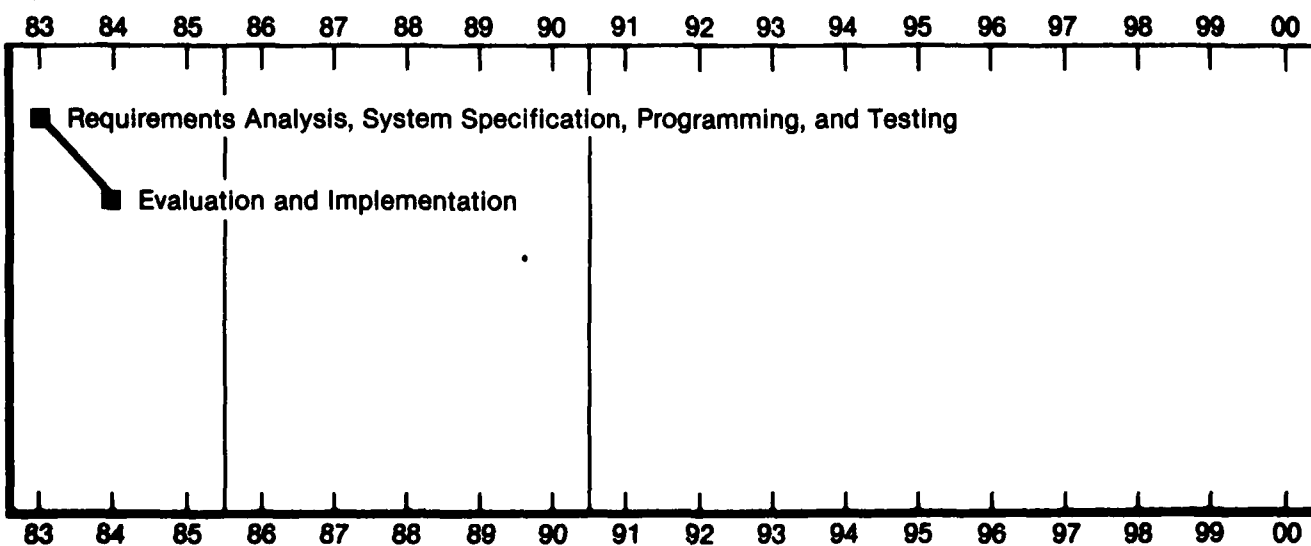
e. Related Projects and Activities: FOM installation and enhancement efforts, Administrative Data Communication Network, ASAS Generalized Software Development, and in-house computer installation

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$929.9
(2) Annual savings after complete implementation	\$343.6

CALENDAR YEAR SCHEDULE



**608. PROJECT: Air Carrier Utilization System—
Mark I**

a. Purpose: To provide a computerized storage and retrieval system of air carrier information on all aircraft operating under Federal Aviation Regulations (FAR) Parts 121 and 135 regarding aircraft utilization, maintenance and propulsion reliability, and air carrier operator data. The system will be designed to use data from service difficulty reports and accident/incident reports.

b. Approach: To design and install an integrated storage, retrieval, and display system using latest software technology. This system will provide the capability, at certain user sites, to call up complete or selected sets of air carrier data for identifying trends concerning in-flight engine shut downs, component malfunctions, causal factors relating to accident/incident information, and maintenance reliability programs. The system will provide immediate access to pertinent air carrier data.

c. Equipment Requirements and Implications: The program will operate within the software and hardware

identified for the Field Office Modernization (FOM) project, the regional computer replacement program, the Administrative Data Communication Network, and the ASAS Generalized Software Development Project.

d. Schedule:

(1) Requirements analysis	1983
(2) System specification	1983
(3) Programming and testing	1984
(4) Review & evaluation	1984
(5) Conversion & implementation	1984

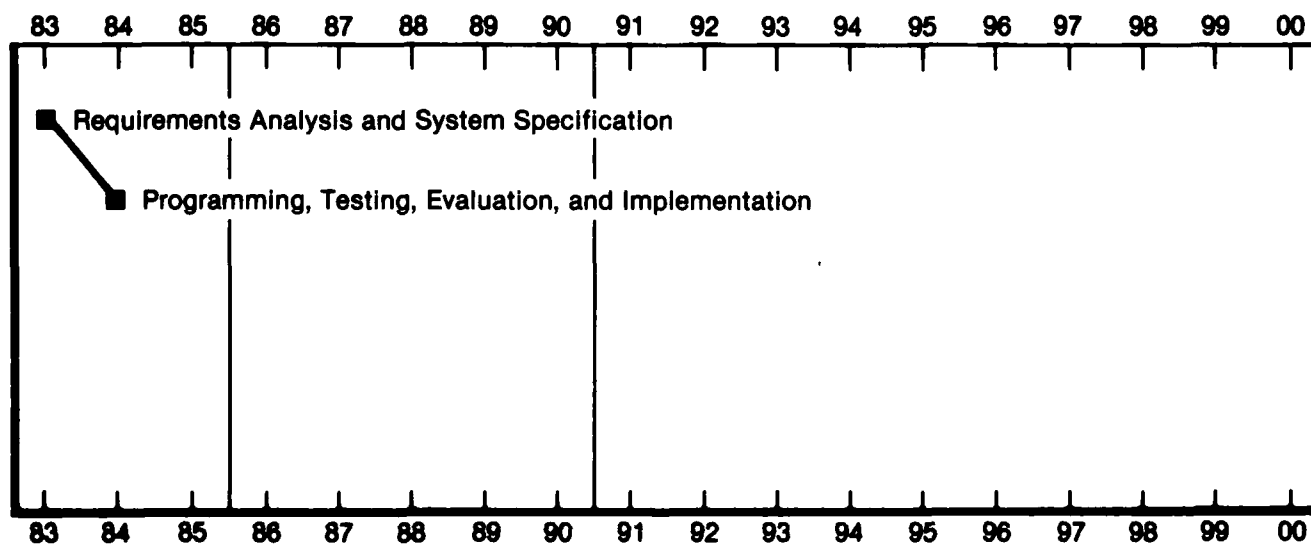
e. Related Projects and Activities: FOM installation and enhancement efforts, Administrative Data Communications Network, ASAS Generalized Software Development, and in-house computer installation

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$660.2
(2) Annual savings after complete implementation	\$158.5

CALENDAR YEAR SCHEDULE



609. PROJECT: Accident/Incident Data System (AIDS)—Mark I

a. Purpose: During Mark I of ASAS, the FAA and the NTSB plan to develop, design, test, evaluate, and implement a consolidated Accident/Incident Data System which will be the common data source for accurate, consistent, and reliable information for both agencies. The proposed system will replace the existing FAA and NTSB accident/incident data files. This effort will streamline and consolidate the needs of both agencies to produce statistics, reports, or technical studies in response to Congress, the DOT, the FAA, the NTSB, other governmental agencies, and the general public.

b. Approach:

(1) The NTSB and FAA have agreed to a new accident/incident data form which contains environmental and technical information about airmen, aircraft, airports, etc.

(2) The NTSB and FAA have identified several options concerning the parameters of the data system and the information exchange procedures.

(3) The FAA and the NTSB will follow the ASAS configuration management procedures as described in the ASAS Handbook.

(4) Operational review and modification to (3) will be jointly studied with full implementation thereafter.

c. Equipment Requirements and Implications: The NTSB will communicate via a direct line with FAA in-house computers. The basic data entry functions will be managed by the FAA field offices via the Field Office Modernization (FOM) equipment. The corresponding data entry functions of the NTSB will be accommodated via their in-house equipment.

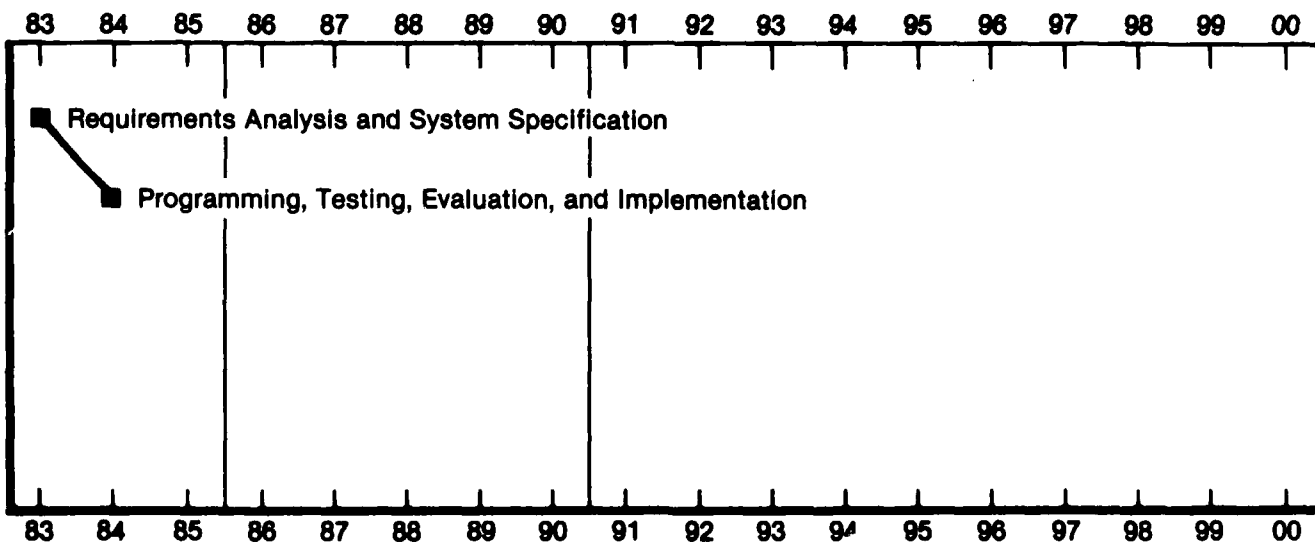
d. Schedule:

(1) Requirements analysis	1983
(2) System specification	1983
(3) Programming and testing	1984
(4) Review & evaluation	1984
(5) Conversion & implementation	1984

e. Related Projects and Activities: FOM installation and enhancement efforts, Administrative Data Communication Network, ASAS Generalized Software Development, and in-house computer installation

f. Costs:*Dollars in Thousands*

(1) Development costs (based on 1983 dollars)	\$2,368.4
(2) Annual savings after complete implementation	\$960.6

CALENDAR YEAR SCHEDULE

610. PROJECT: Enforcement Information System (EIS)—Mark I

a. Purpose: During Mark I of ASAS, the FAA plans to implement an Enforcement Information System which will identify the various companies and individuals involved in violations implied by the Federal Aviation Regulations (FAR). The proposed system will inform the FAA attorney, investigator, or analyst what actions have been taken, what were the results of that action, what is the status of that action, and the history of all related actions concerning the particular violation being examined or studied in a timely manner. The information contained in the EIS will permit flight instructors, medical examiners, and investigators to focus on particular problems in their related areas.

b. Approach: The FAA will follow the prescribed procedures of the ASAS Handbook on configuration management.

c. Equipment Requirements and Implications: This program has been designed for national implementation

on the Field Office Modernization equipment (FOM) and the regional computers using the Administrative Data Communication Network.

d. Schedule:

(1) Requirements analysis	1983
(2) System specification	1983
(3) Programming and testing	1983
(4) Review & evaluation	1983
(5) Conversion & implementation	1984

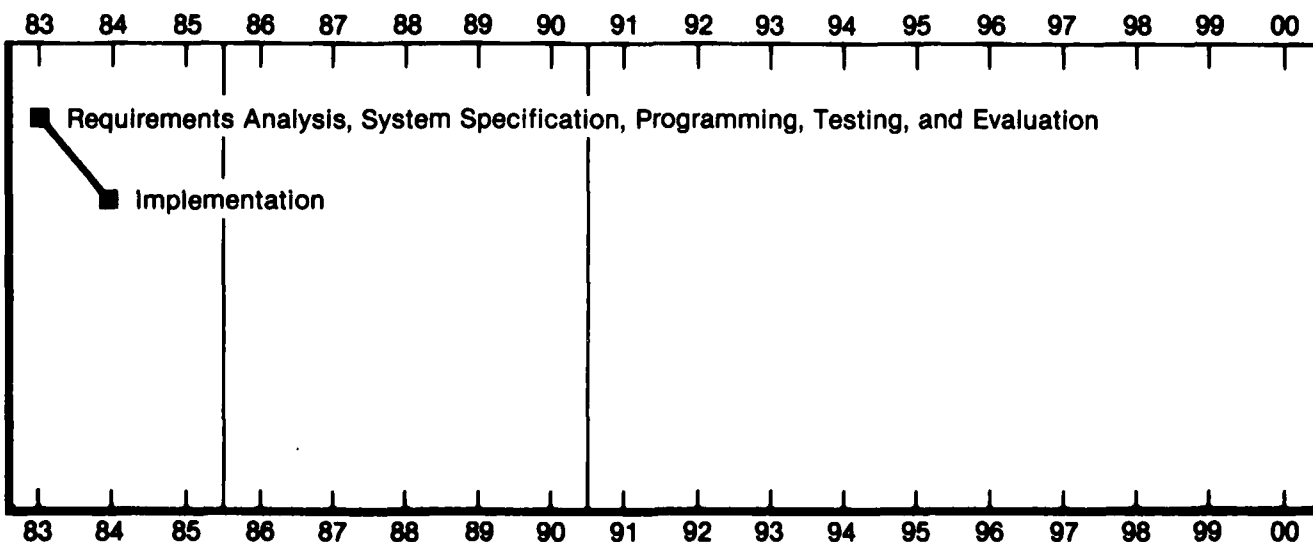
e. Related Projects and Activities: FOM installation, in-house computer installation, and ASAS Generalized Software Development

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$2,296.4
(2) Annual savings after complete implementation	\$960.6

CALENDAR YEAR SCHEDULE



611. PROJECT: Service Difficulty Reporting System (SDR)—Mark I

a. Purpose: During Mark I of ASAS, the FAA intends to improve in-house transmission of Service Difficulty Report (SDR) information through the use of Field Office Modernization (FOM) equipment and regional computers. This will permit ready access to more current information and analysis of SDR information by field office personnel to facilitate service difficulty investigation.

b. Approach: The FAA will follow the ASAS Configuration Management Handbook manual for system development.

c. Equipment Requirements and Implications: This program has been designed for national implementation on the Field Office Modernization (FOM) equipment and the regional computers using the Administrative Data Communication Network.

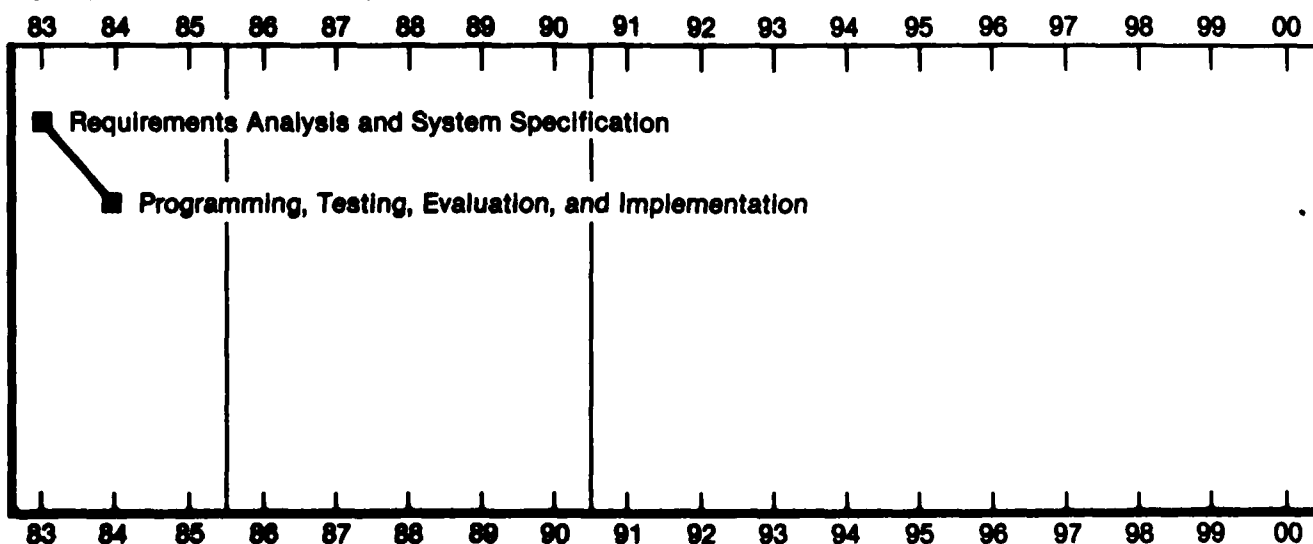
d. Schedule:

(1) Requirements analysis	1983
(2) System specification	1983
(3) Programming and testing	1984
(4) Review & evaluation	1984
(5) Conversion & implementation	1984

e. Related Projects and Activities: FOM installation, in-house installation, and ASAS Generalized Software Development

f. Costs:*Dollars in Thousands*

(1) Development costs (based on 1983 dollars)	\$1,605.8
(2) Annual savings after complete implementation	\$713.8

CALENDAR YEAR SCHEDULE

612. PROJECT: Comprehensive Airmen Information System (CAIS)—Mark I

a. Purpose: To further consolidate airmen information into a single data base tailored to interface with related aviation activity in support of aviation needs.

b. Approach: The following procedure will be used: identify airmen certification needs, develop a requirements package, determine the feasibility of placing the airmen written test system on a computer based instruction network, and purge the airmen certification system data base of obsolete information.

c. Equipment Requirements and Implications: Additional computer resources are needed to establish the examination flight instructor/school files and process the purge.

d. Schedule:

(1) Requirements analysis	1983
(2) System specification	1983
(3) Programming and testing	1984
(4) Review & evaluation	1984
(5) Conversion & implementation	1984

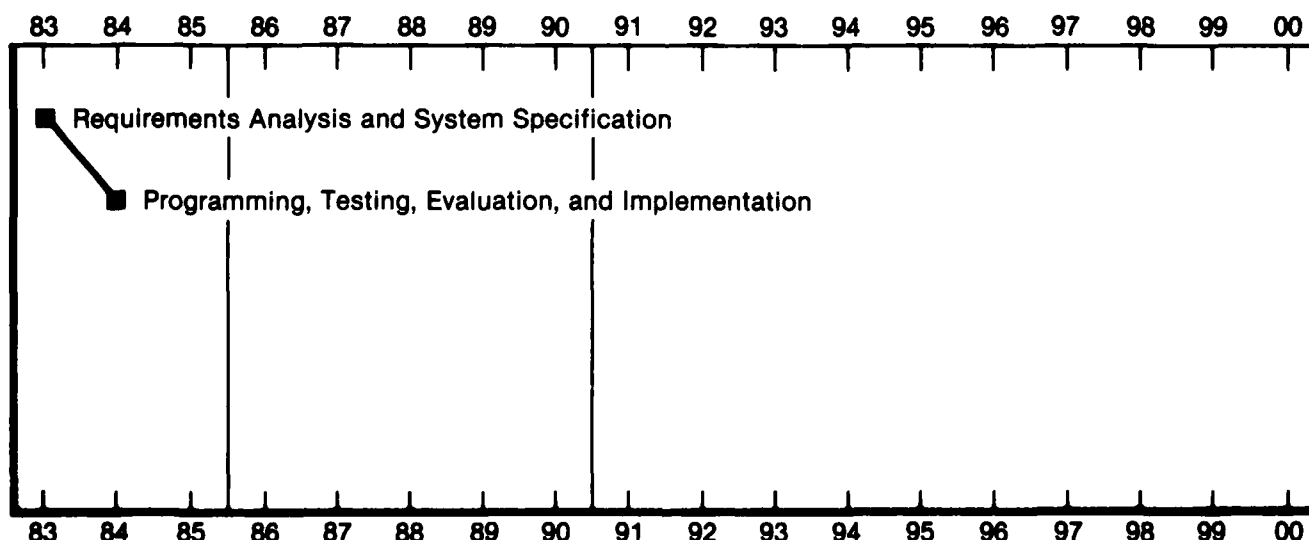
e. Related Projects and Activities: This system will interface with all systems, manual and automated, requiring airmen information. Other related projects are Field Office Modernization (FOM) installation and in-house computer installation.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$2,339.4
(2) Annual savings after complete implementation	\$1,307.7

CALENDAR YEAR SCHEDULE



613. PROJECT: Designees—Mark I

a. Purpose: To provide rapid access to authorization and performance information on the many classes of designees that support FAA functions.

b. Approach: Source document input at the field office level will be developed. Ad hoc and standard report outputs will be provided.

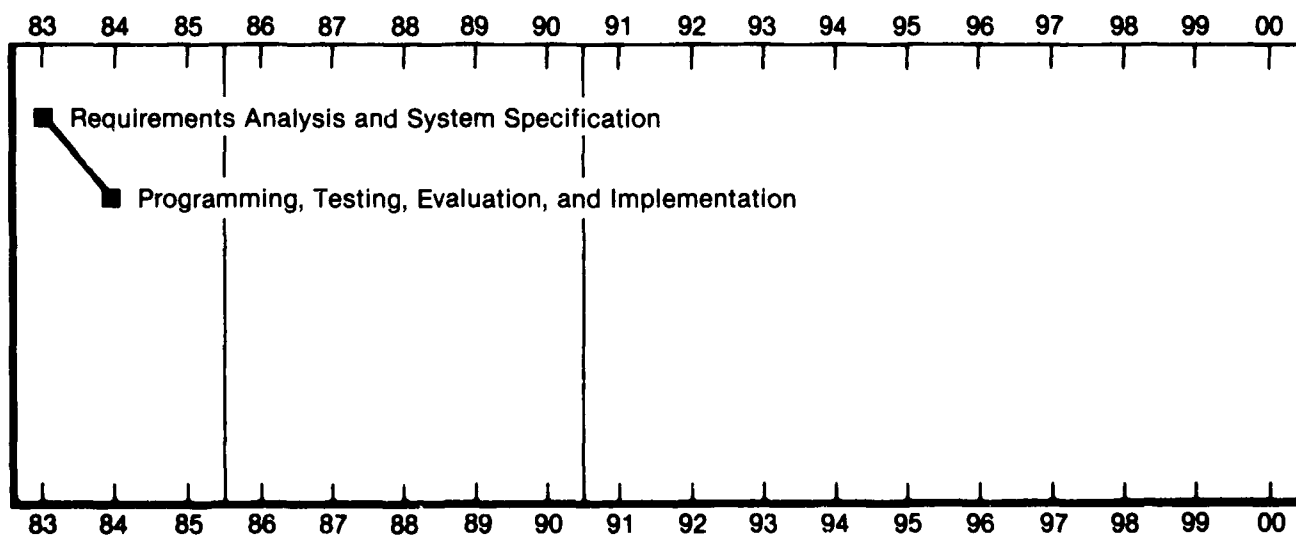
c. Equipment Requirements and Implications: Field office information processing equipment, regional office host computers, and the Aviation Standards National Field Office host computer

d. Schedule:

(1) Requirements analysis	1983
(2) System specification	1983
(3) Programming and testing	1984
(4) Review & evaluation	1984
(5) Conversion & implementation	1984

e. Related Projects and Activities: None**f. Costs:***Dollars in Thousands*

(1) Development costs (based on 1983 dollars)	\$806.9
(2) Annual savings after complete implementation	\$281.9

CALENDAR YEAR SCHEDULE

614. PROJECT: Aircraft Product Manufacturers, Air Agencies, and Air Operators—Mark I

a. Purpose: To reduce labor-intensive, time-consuming, incomplete, inaccurate methods for the reporting, storage, and retrieval of records associated with the surveillance of aircraft product manufacturers, air agencies, and air operators.

b. Approach: Develop a computer based system to identify aircraft products, air agencies performance, and air operators ratings which will enable the Aviation Standards organization to develop analytical software and techniques for quality analysis of aircraft products for a baseline safety profile.

c. Equipment Requirements and Implications: User-friendly information processor terminals, capable of interfacing with centralized data bases, will be required in field, regional, and Headquarters offices.

d. Schedule:

(1) Requirements analysis	1983
(2) System specification	1983
(3) Programming and testing	1984
(4) Review & evaluation	1984
(5) Conversion & implementation	1984

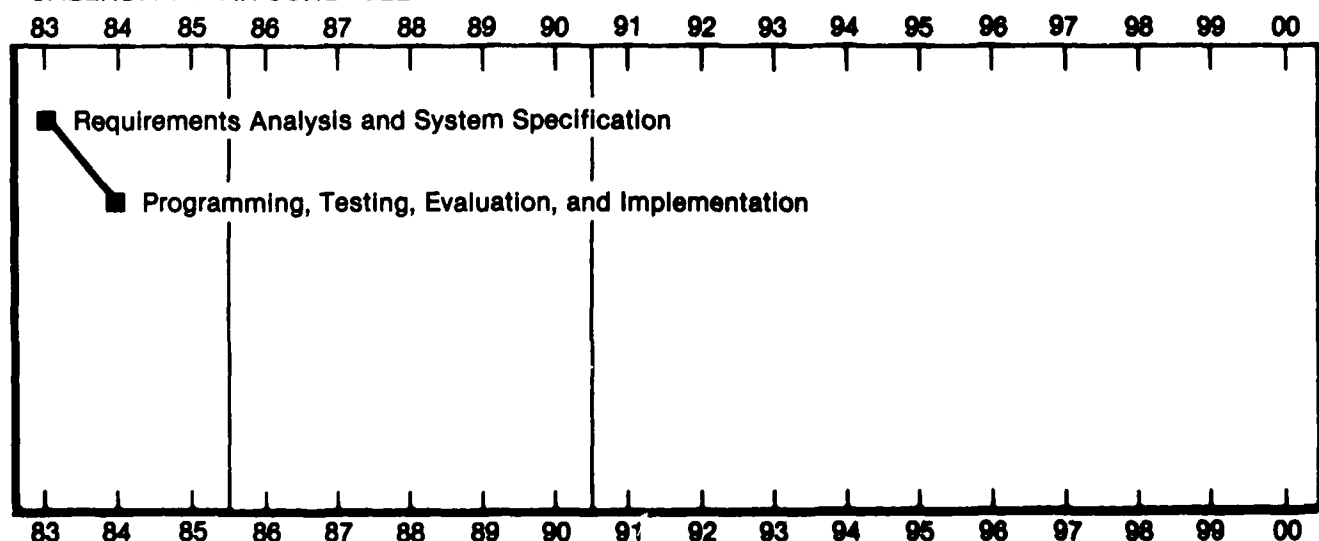
e. Related Projects and Activities: Field Office Modernization (FOM) installation, in-house computer installation, ASAS Generalized Software Development, Administrative Data Communication Network, and Aircraft Registry System

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$3,057.6
(2) Annual savings after complete implementation	\$1,415.4

CALENDAR YEAR SCHEDULE



615. PROJECT: Air Transportation Analysis System (ATAS)—Mark I

a. Purpose: To assist in handling more efficiently the day-to-day operations under the Air Transportation regulations (Parts 121 and 135). The effects of economic deregulation on the industry and the increasing complexity of safety regulations lead to a requirement for additional resources to increase efficiency and to maintain the high margin of safety present in air transportation.

b. Approach: Develop a computer based system which can (1) print enforceable operating documents for operators, (2) aid decisionmaking on operator requests, (3) provide central control over the nationwide regulatory process, and (4) provide data for information and control.

c. Equipment Requirements and Implications: Field Office Modernization (FOM) terminals and host computer(s)

d. Schedule:

(1) Requirements analysis	1983
(2) System specification	1984
(3) Programming and testing	1984
(4) Review & evaluation	1984
(5) Conversion & implementation	1984

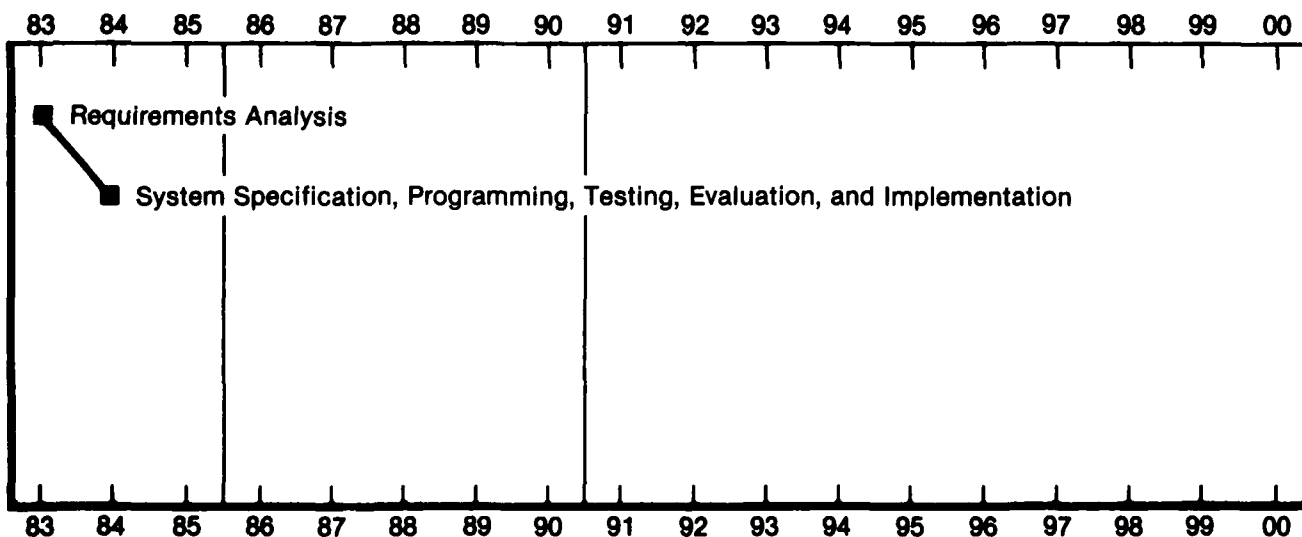
e. Related Projects and Activities: Field Office Modernization (FOM) installations, in-house computer installation, Administrative Data Communication Network, FOM enhancement effort, and ASAS Generalized Software Development

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$1,160.5
(2) Annual savings after complete implementation	\$737.2

CALENDAR YEAR SCHEDULE



616. PROJECT: Medical Information Systems— Mark I

a. Purpose: To improve both the effectiveness and efficiency of capturing, storing, processing, and reporting of medical information.

b. Approach:

(1) Medical Accident System (MAS)—convert from existing commercial timesharing to an in-house operating environment.

(2) Health Information System (HIS)—provide direct entry and data extraction capabilities to the regions by decentralizing HIS operations to the field.

(3) Consolidated Airmen Information System (CAIS—MEDICAL)—reduce frequency of airmen medical examinations and initiate feasibility studies to assess state-of-the-art information technologies that, when applied to medical certification activities, will facilitate timely, complete, and accurate processing of these data.

c. Equipment Requirements and Implications:

(1) MAS/HIS—Existing terminals, printers, and communications will be used. No additional hardware will be required.

(2) CAIS—Feasibility studies initiated to improve data management within the airmen medical certification function will identify and document future equipment needs.

d. Schedule:

(1) Requirements analysis	1983
(2) System specification	1983
(3) Programming and testing	1984
(4) Review & evaluation	1984
(5) Conversion & implementation	1984

e. Related Projects and Activities:

(1) MAS—Administrative and environmental data from AIDS and pre-crash medical certification data from the Airmen Certification System.

(2) HIS—Personnel data from PMIS and workers' compensation data from the Department of Labor.

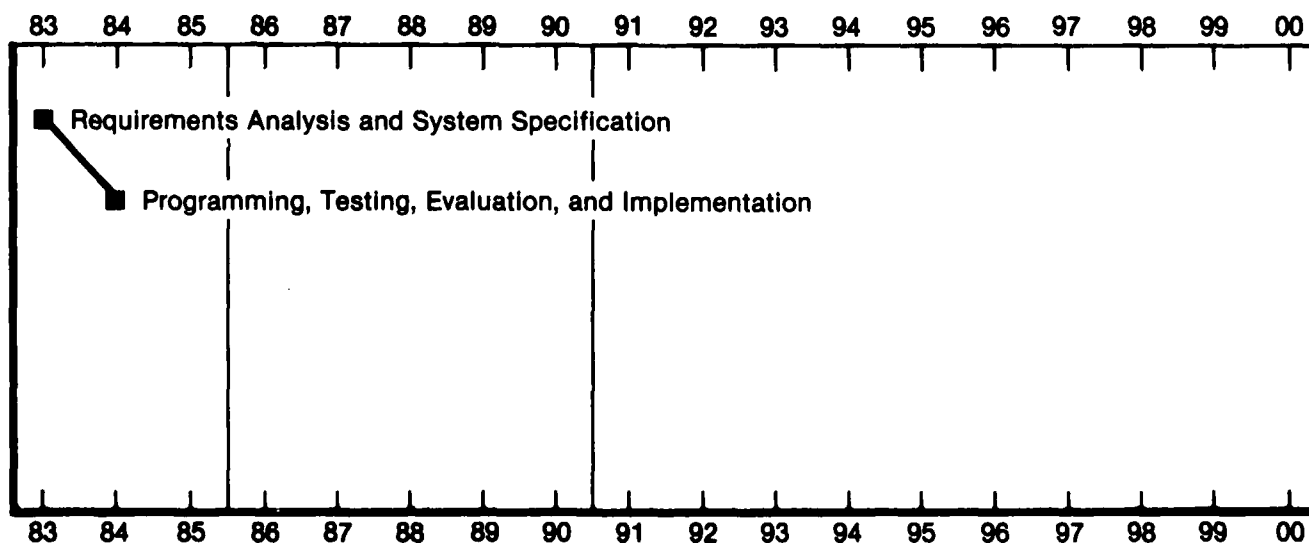
(3) CAIS—Airmen Certification and Aviation Medical Examiners' data.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$1,043.8
(2) Annual savings after complete implementation	\$478.7

CALENDAR YEAR SCHEDULE



617. PROJECT: Airworthiness Directive System—Mark II

a. Purpose: To provide timely information to FAA officials and aircraft operators on potential or identified safety areas where immediate action is necessary to prevent or avert a hazardous condition. To alert operators and aircraft owners on mechanical or operating deficiencies and to notify the impacted parties on appropriate safety action to be taken. To provide an information system for safety analysis that will assist FAA on policy development, regulation, and operator awareness on safety issues.

b. Approach: Field Office Modernization (FOM) terminals and in-house host computers will be used in conjunction with the Administrative Data Communication Network to facilitate rapid dissemination of mechanical or operating deficiencies, reports, and other airworthiness directives.

c. Equipment Requirements and Implications: Field Office Modernization (FOM) Information Processing Equipment, in-house computers, and Administrative Data Communication Network.

d. Schedule:

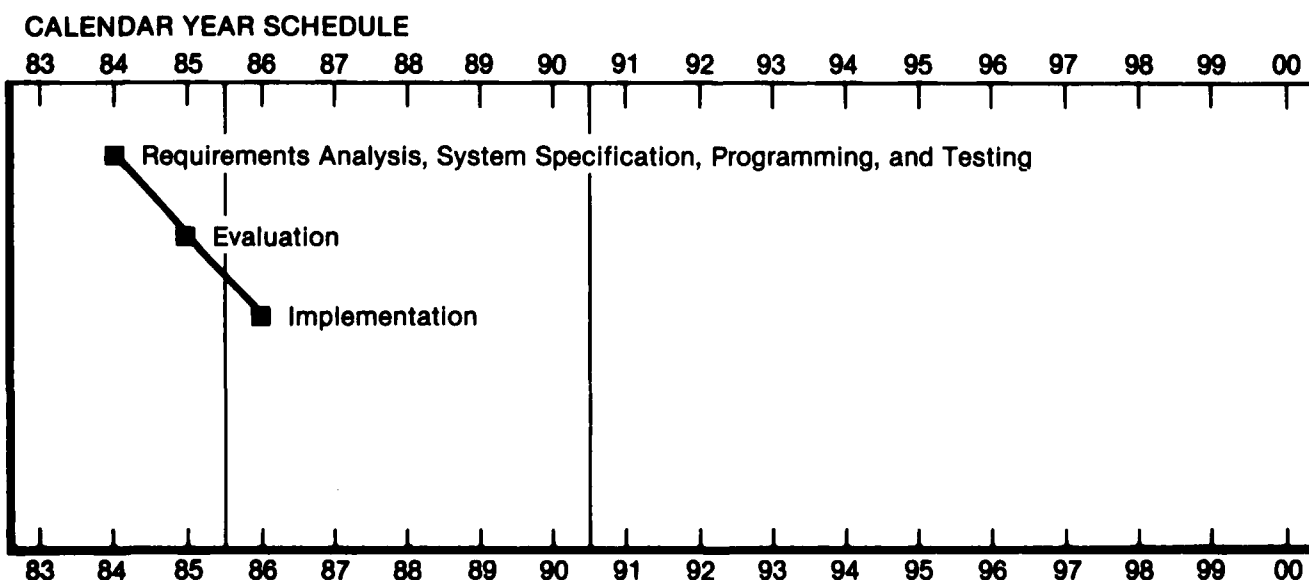
(1) Requirements analysis	1984
(2) System specification	1984
(3) Programming and testing	1984
(4) Review & evaluation	1985
(5) Conversion & implementation	1986

e. Related Projects and Activities: FOM installation, in-house computer installation, and the Administrative Data Communication Network

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$1,870.7
(2) Annual savings after complete implementation	\$898.9



618. PROJECT: Aircraft Registry System—Mark II

a. Purpose: To develop and implement an improved national Aircraft Registry Information System that will provide the FAA with basic aircraft environmental and technical data. To facilitate the dissemination of information for authorized officials for analytical and informational purposes. To study aircraft profiles in relationship to safety issues. To support the regulatory functions under Title VI of the Federal Aviation Act.

b. Approach: The system development process guidance described in the ASAS Program Implementation Plan will be followed. The plan calls for the system development to proceed in five phases: Requirements Analysis, System Definition, System Design, System Implementation, and Systems Test and Evaluation. Several specifications will be produced and management review is required before proceeding to the next phase in most cases.

c. Equipment Requirements and Implications: This project will require the use of Field Office Moderniza-

tion (FOM) hardware and software, regional computer capabilities, the Administrative Data Communication Network, and local processors.

d. Schedule:

(1) Requirements analysis	1985
(2) System specification	1986
(3) Programming and testing	1986
(4) Review & evaluation	1986
(5) Conversion & implementation	1987

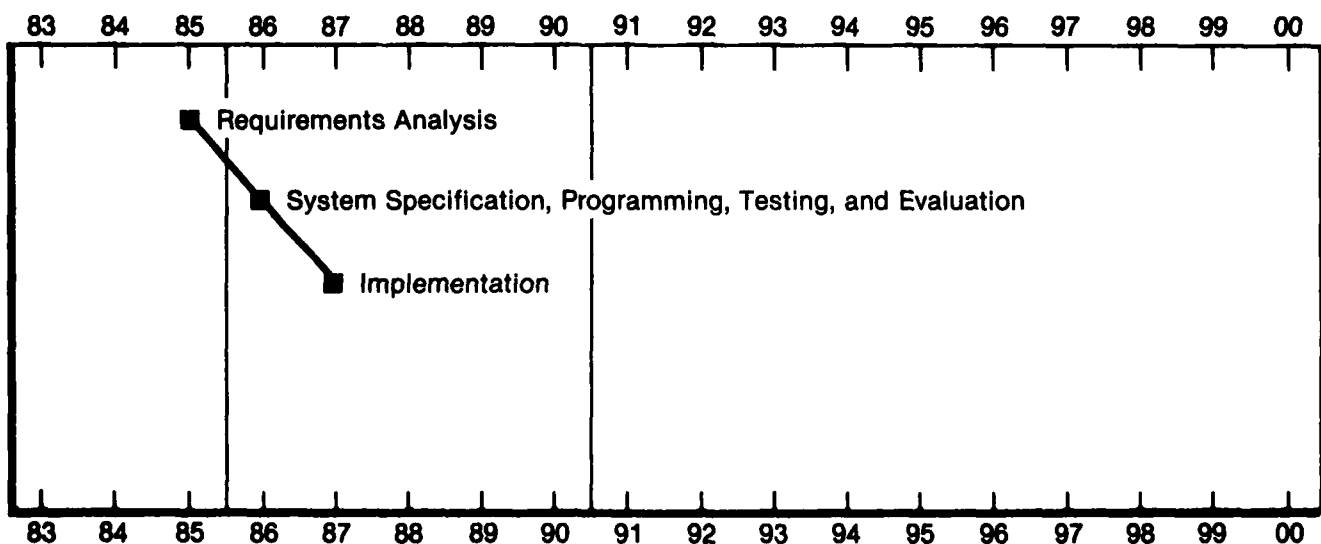
e. Related Projects and Activities: FOM installation, in-house computer installation, FOM Enhancement Project, ASAS Generalized Software Development, and Administrative Data Communication Network.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$4,698.1
(2) Annual savings after complete implementation	\$542.0

CALENDAR YEAR SCHEDULE



619. PROJECT: Accident Prevention—Mark II

a. Purpose: To provide monitoring, evaluation and control of the activities throughout the FAA in the area of accident prevention education. Coordination of these activities will provide a methodical approach to measuring effectiveness and identifying problem areas that need attention.

b. Approach: Develop a data base of all accident prevention activities throughout the Aviation Standards organization.

c. Equipment Requirements and Implications: Field Office Modernization (FOM) processing equipment, regional host computers, and the Aviation Standards National Field Office host computer.

d. Schedule:

(1) Requirements analysis	1984
(2) System specification	1985
(3) Programming and testing	1985
(4) Review & evaluation	1986
(5) Conversion & implementation	1986

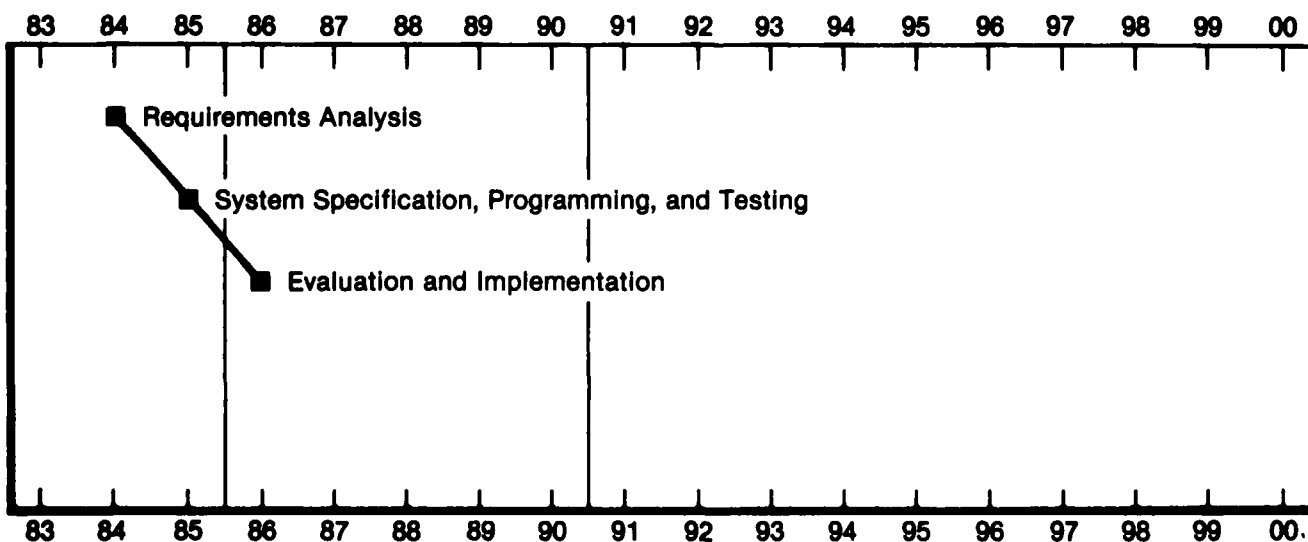
e. Related Projects and Activities: Accident/ Incident Data System and the Medical Accident System

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$3,234.1
(2) Annual savings after complete implementation	\$1,315.9

CALENDAR YEAR SCHEDULE



620. PROJECT: Near Mid-Air Collision (NMAC) System—Mark II

a. Purpose: During Mark II of ASAS, the FAA plans to design, develop, test, evaluate, and implement a Near Mid-Air Collision System which will identify incidents involving airborne aircraft. The proposed system will permit the analyst to study parameters which affect the national airspace utilization and safety. This system will provide an analytical tool to study aircraft separation, flight procedures, emergency avoidance techniques, and other airborne safety issues.

b. Approach: The FAA will follow the program management technique described in the ASAS Configuration Management Handbook.

c. Equipment Requirements and Implications: This program has been designed for national implementation on the Field Office Modernization (FOM) processing

equipment and the regional computers using the Administrative Data Communication Network.

d. Schedule:

(1) Requirements analysis	1984
(2) System specification	1984
(3) Programming and testing	1985
(4) Review & evaluation	1985
(5) Conversion & implementation	1986

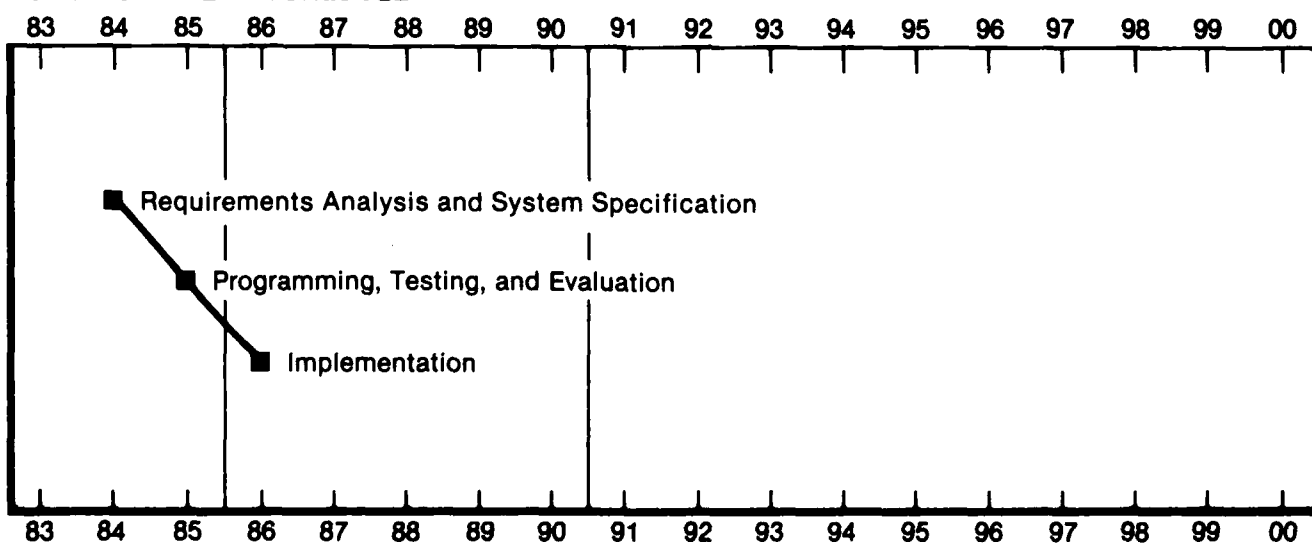
e. Related Projects and Activities: FOM installation; in-house computer installation; and ASAS Generalized Software Development

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$1,094.6
(2) Annual savings after complete implementation	\$467.0

CALENDAR YEAR SCHEDULE



621. PROJECT: NTSB Recommendation Information System—Mark II

a. Purpose: During Mark II of ASAS, the FAA plans to design, develop, test, evaluate, and implement an NTSB Recommendation Information System to track the status of each FAA response to the NTSB recommendation, to identify the appropriate FAR, to determine if a regulation requires review or modification, to formulate what actions are needed, and to identify the appropriate operating office, the milestones, and other information needed by the FAA to respond to the NTSB. The proposed system will permit the analyst to generate both managerial and analytical reports in a timely manner.

b. Approach: The FAA will follow the program management procedures as described in the ASAS Configuration Management Handbook.

c. Equipment Requirements and Implications: This program has been designed for Headquarters operations

on the Field Office Modernization (FOM) processing equipment and in-house computer resources.

d. Schedule:

(1) Requirements analysis	1985
(2) System specification	1986
(3) Programming and testing	1986
(4) Review & evaluation	1986
(5) Conversion & implementation	1987

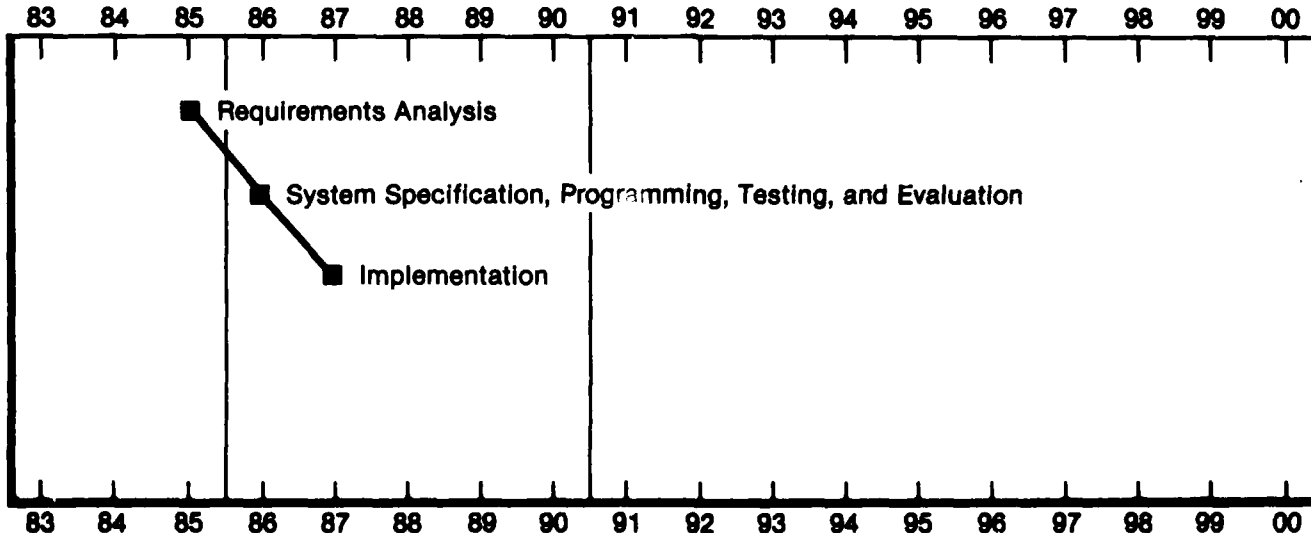
e. Related Projects and Activities: FOM installation, in-house computer installation, Accident/Incident Data System, and ASAS Generalized Software Development.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$945.3
(2) Annual savings after complete implementation	\$467.0

CALENDAR YEAR SCHEDULE



622. PROJECT: Simulator Approved System— Mark II

a. Purpose: To provide a data base of all existing flight simulators that will include configuration, historical, and current approval data. To provide an integrated data base of current regulations, orders, circulars, policies, technical procedures, and guidance upon which approval determinations can be based.

b. Approach:

(1) Build a hardcopy library of active regulations, policies and guidance.

(2) Establish a format for providing simulator approval status and create a current status file in hardcopy.

(3) Enter the test of (1) and (2) above into the data base.

(4) Create software that provides real-time access to this index at the working level.

(5) Create software that provides real-time change of the data base by appropriate FAA offices.

c. Equipment Requirements and Implications: This system can be operated on current in-house computers, terminals, and printers.

d. Schedule:

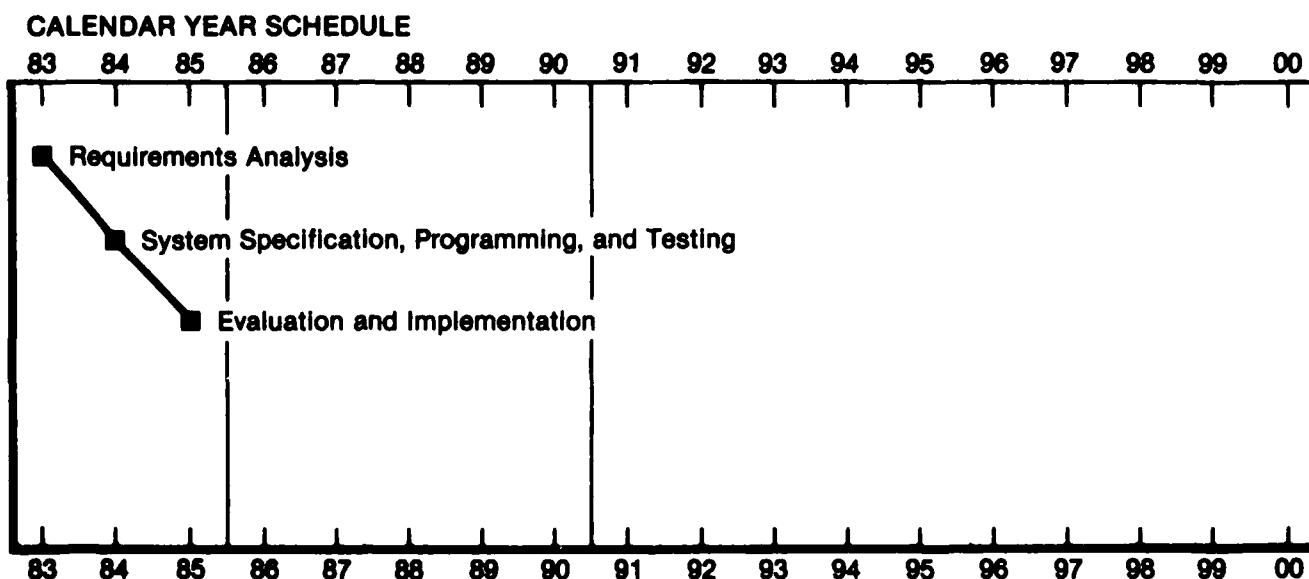
(1) Requirements analysis	1983
(2) System specification	1984
(3) Programming and testing	1984
(4) Review & evaluation	1985
(5) Conversion & implementation	1985

e. Related Projects and Activities: Airmen certification

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$1,002.3
(2) Annual savings after complete implementation	\$317.0



623. PROJECT: Civil Aviation Security Data— Mark II

a. Purpose: To develop an automated Civil Aviation Security management data base including a merger in ASAS of the existing automated hazardous material data at the Transportation System Center and the automated hijack data in the Bowne Information System.

b. Approach: The approach to be taken is to design and install an integrated storage, retrieval, and display system that will include hazardous materials data, hijack threat data, air carrier station inspection data, airport inspection data, K-9 team activity data, screening activities report data, security alerts/bulletins/summaries, physical security data, and internal investigative data. The system will interface with the security data in the PMIS, the automated enforcement data, and the airmen and aircraft registry records. This system would allow Civil Aviation Security in Washington Headquarters, Regional Security Divisions, and Civil Aviation Security Field Offices to have immediate access to data essential to effective and efficient operations and management.

c. Equipment Requirements and Implications: The necessary equipment will be provided by PMIS or by Field Office Modernization (FOM) and the in-house computer acquisitions.

d. Schedule:

(1) Requirements analysis	1984
(2) System specification	1984
(3) Programming and testing	1984
(4) Review & evaluation	1985
(5) Conversion & implementation	1985

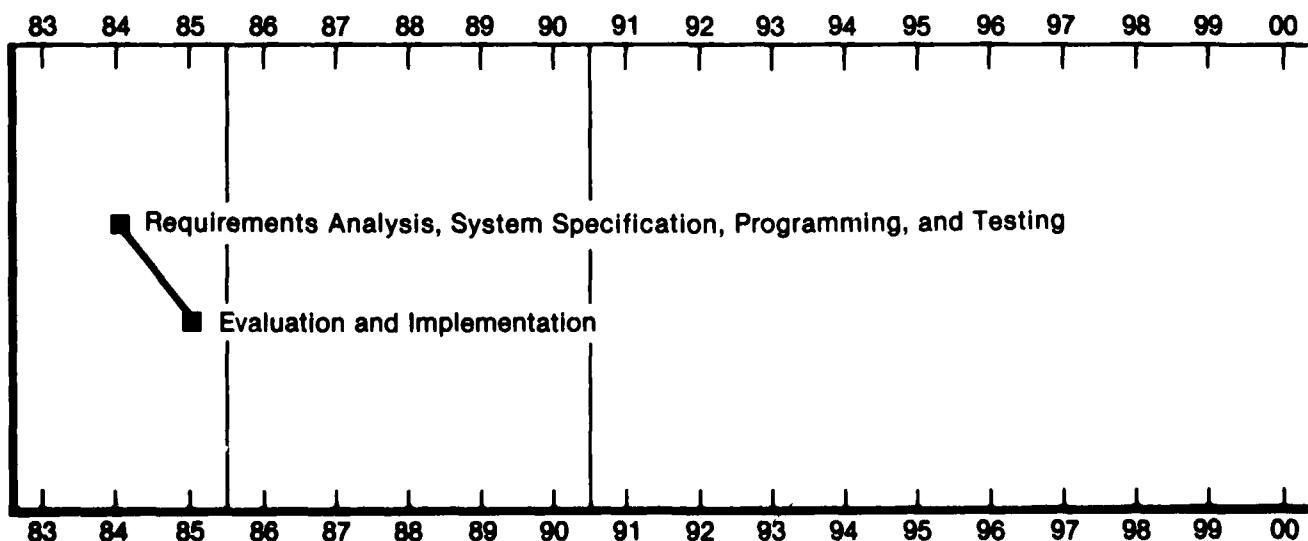
e. Related Projects and Activities: Development of an automated management data base for internal security, Office of Management Systems study to automate the Headquarters Classified Document Control Point, and the Bowne Information System project to develop an integrated internal/external management data base.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$1,343.0
(2) Annual savings after complete implementation	\$526.7

CALENDAR YEAR SCHEDULE



624. PROJECT: Archives—Mark II

a. Purpose: To provide rapid access to current and historical certificate and regulatory records (project files, Notices of Proposed Rulemaking (NPRM), preambles, directives, advisory circulars, legal opinions, policy memoranda, dockets, handbooks, aircraft certificate information, etc.).

b. Approach: System design and implementation will follow a detailed requirements analysis that will be conducted to ascertain the specific types of records needed and the level of detail (reference, record, abstract, entire document). In-house computer equipment will be used in conjunction with a videomicrographics system to facilitate rapid access and retrieval of regulatory and certificate information.

c. Equipment Requirements and Implications: ASAS network of Field Office Modernization (FOM) terminals and host computer(s) and a videomicrographics unit for storage of records

minals and host computer(s) and a videomicrographics unit for storage of records

d. Schedule:

(1) Requirements analysis	1984
(2) System specification	1984
(3) Programming and testing	1985
(4) Review & evaluation	1986
(5) Conversion & implementation	1987

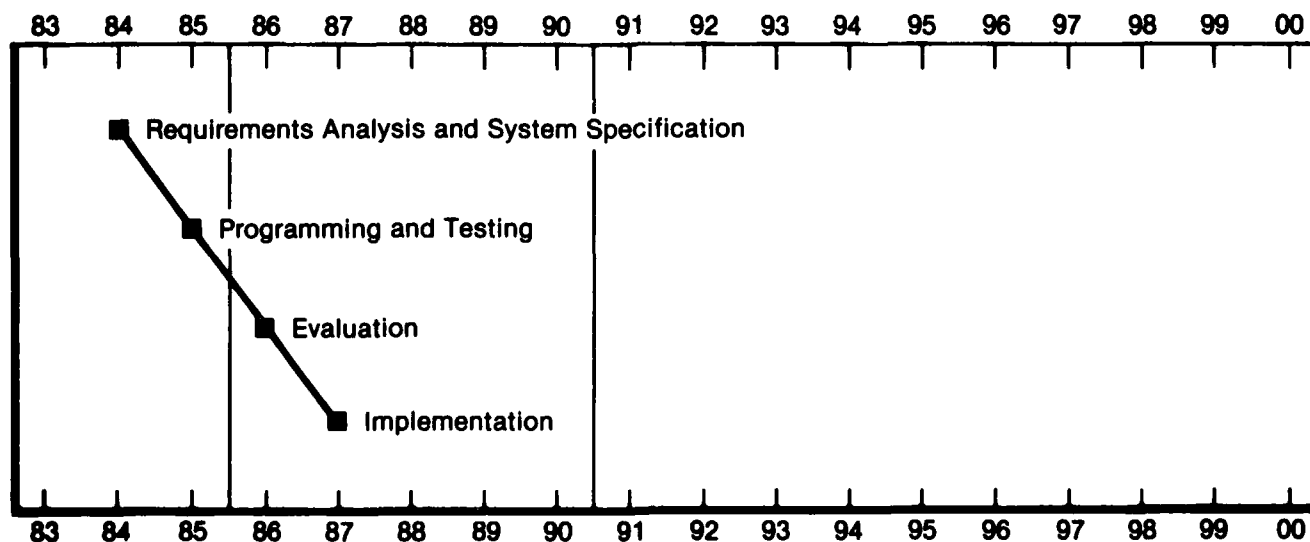
e. Related Projects and Activities: FOM installation and enhancement projects, in-house computer installation, Administrative Data Communication Network, and ASAS Generalized Software Development

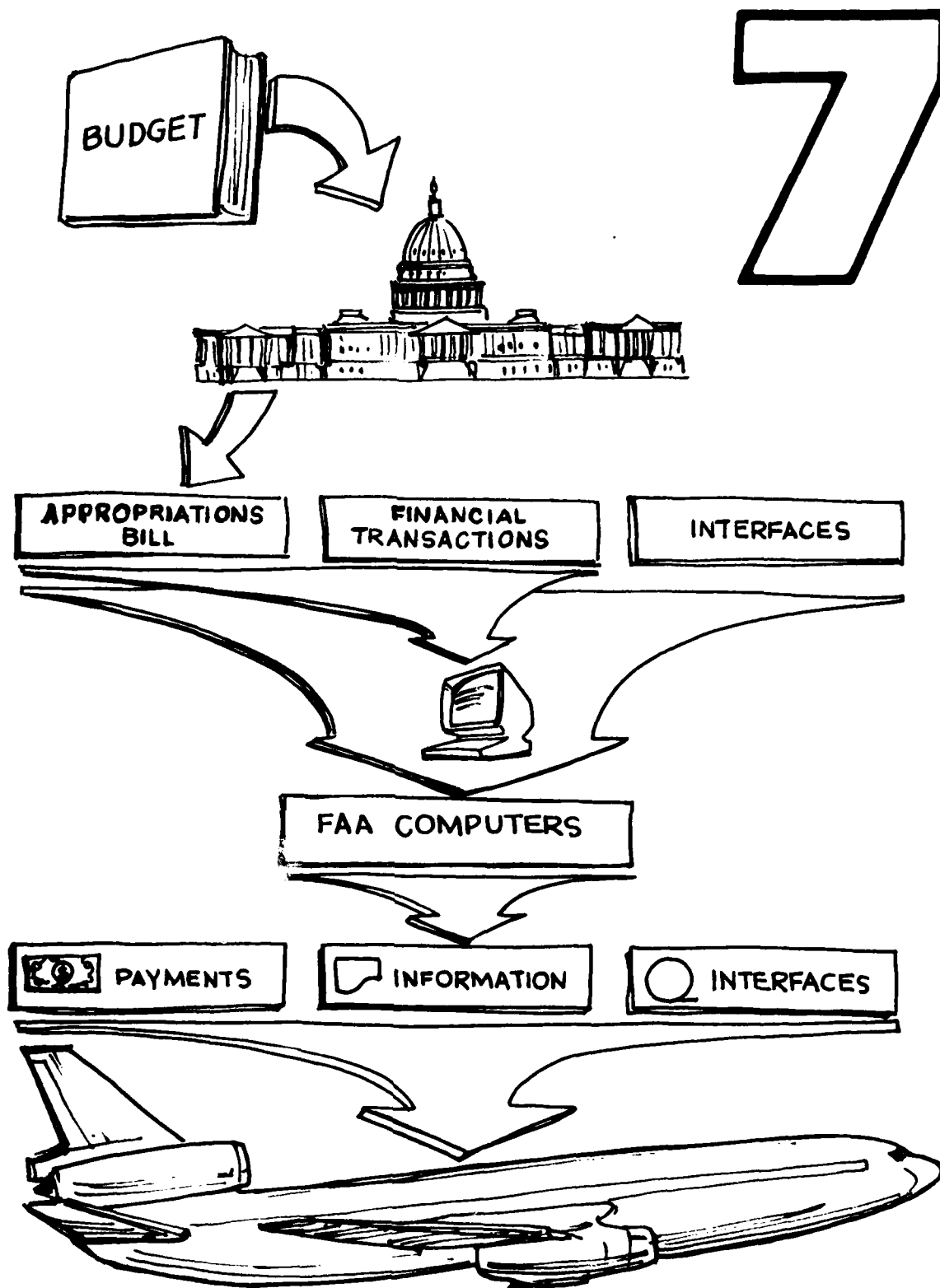
f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$4,427.0
(2) Annual savings after complete implementation	\$2,299.9

CALENDAR YEAR SCHEDULE





Financial Resources Information Requirements

Chapter 7. FINANCIAL RESOURCES INFORMATION REQUIREMENTS

Section 1. GENERAL

700. PRESENT ENVIRONMENT, PROBLEMS, AND DEFICIENCIES

The Financial Resources area provides information to three primary clients: (1) agencies external to the FAA, (2) the general public, and (3) internal agency management. The information needs of each of these groups are widely diversified and prescribed through legislation, Governmentwide and/or Departmentwide regulations, and internal financial orders.

a. Until 1979, the Financial Resources Information area was characterized by decentralization of systems, heavy reliance on manual processes, and duplicate entry of common transactions into a variety of independent and specialized subsystems. Since that time, major automated systems have been introduced. December 1978 marked a major automation advance with the start of implementation of the Uniform Payroll System (UPS). The UPS, which is now used to pay 97% of the Department of Transportation's employees, features a centralized data base, distributed data entry and limited editing, limited automated interface with the Personnel Management Information System (PMIS), and centralized payment of compensation. In 1979, the Office of Budget installed an automated allotment issuance and control system which provides for automated allotments to the nine regions and all Washington elements and maintains current ledgers for all appropriations. In 1981, the Personal Property In-Use Management System (PPIMS) was implemented. While more heavily oriented to item than to financial accounting, the PPIMS incorporates significant integration of financial transactions utilizing decentralized data bases and online editing. November 1982 was the start of implementation for the Uniform Accounting System (UAS). This system encompasses centralized disbursement, central accounting and national reporting, general accounting, and cost accounting processes. It features a centralized data base, online update, and centralized payment of all FAA liabilities (excluding payroll).

b. Although each of the applications described above represents a significant achievement, each requires enhancement to optimize its inherent capabilities. In addition, major new legislation concerning prompt

payments, debt collection, and financial integrity and new Office of Management and Budget (OMB) regulations will require major changes to present applications.

c. Financial Resources Information is composed of four distinct activities: (1) budget management, (2) financial accounting, (3) payroll, and (4) other fiscal processes. A description of these functions and related deficiencies or problems are discussed below:

(1) Budget management involves the formulation of agency resource requirements, the allocation of resources received, and the revision of requirements as a result of tracking actual financial performance. With the exceptions of the Facilities and Equipment budgetary requirements system and the budget allotment system, the FAA budget system is a manual system. The remainder of the budget system transcribes data available from other agency automated systems into the manual budget system for processing. It is a labor-intensive, time-consuming system impacting most of FAA's administrative and program offices.

(2) Financial accounting includes the classification, recording, summarization, reporting, and analysis of transactions relating to economic activity of the agency. Financial accounting also encompasses internal control necessary to prevent fraud, waste, and abuse of agency resources. This area is composed of four major subfunctions: (a) central accounting and national reporting, (b) general accounting, (c) cost accounting, and (d) property accounting. The problems or deficiencies of the present financial accounting systems have been identified as follows:

(a) There is no provision in UAS to provide for the classification, recording, and reporting of downward adjustments to prior year obligations of multiyear appropriations.

(b) UAS requires allotments for entering multiyear appropriations by program year, while the Office of Management and Budget apportions them in the aggregate without regard to program year.

(c) Although the Office of Budget allotment issuance system captures allotment data in machine readable form at the time of issuance, allotments must still be entered manually into the UAS.

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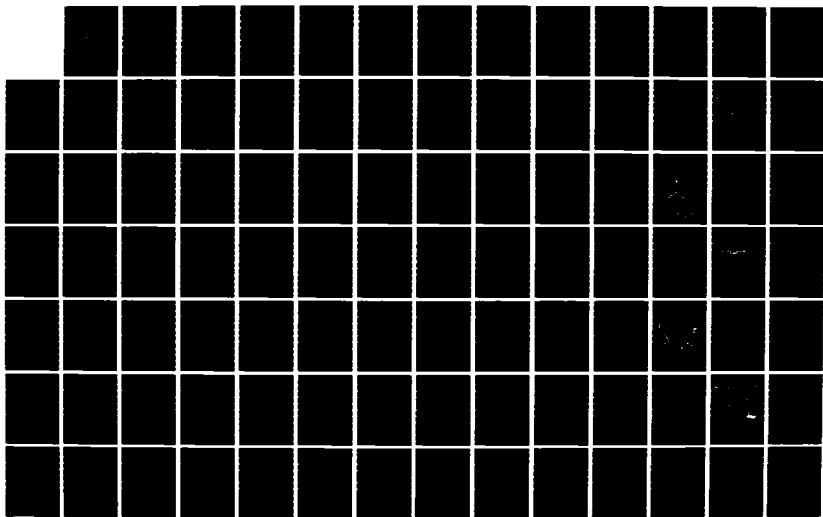
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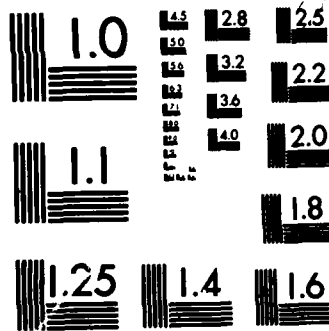
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(d) UAS provides only limited ad hoc reporting.

(e) Grant reporting, cash management, and property management systems have not been fully incorporated into or integrated with UAS.

(f) Cost accounting information is not uniformly available for all major segments of FAA operations.

(3) Payroll encompasses the calculation of personnel compensation and related benefits for agency employees and accounting for the use of their paid and unpaid leave. The UPS operates as a partially centralized system. The Aeronautical Center payroll office is responsible for about 45% of the employee accounts, and the remaining 55% are distributed among seven other payroll offices. Because so many of the field activities are widely dispersed, Time and Attendance Reports (T&A's) must occasionally be mailed before the end of the pay period to reach payroll organizations in time for inclusion in payroll processing; therefore, some employees do not receive full pay entitlements for the pay period in which they are earned. Other problems relate to the interface between the Personnel Management Information System (PMIS) and the UPS.

(4) Other fiscal processes encompass the activities involved in preparing for and scheduling the payment of invoices and claims for goods and services, which are exclusive of the compensation and benefits paid for the personal services of employees. Voucher examination and billing, the major activities in this area, are decentralized and largely manual processes. Manual processing results in discount losses and interest penalties for late payments. There is only limited use being made of the authority to audit invoices and claims on a statistical sampling basis.

701. LONG TERM GOALS

The overall, long term goals for Financial Resources Information are to:

- improve budget analysis, formulation, and execution;
- meet all legislative and regulatory requirements efficiently and effectively;
- achieve optimum accuracy and timeliness;
- provide a basis for measuring financial results of agency missions; and
- provide flexible access to financial information.

The long term goals of the four Financial Resources activity areas, as well as a discussion of the scope of the data base, functions to be supported, system access, and interfaces, are as follows:

a. Budget Management

(1) **Goals.** The FAA's budget management goals are to automate, where cost effective, the budget formulation, allocation, tracking, and revision process and to take advantage of opportunities to achieve interface or

integration with other information areas. This will allow analysts to devote their energies to budget analysis rather than to laborious data compilation.

(2) **Scope of Data Base.** The budget data base will include positions, dollars, employee years, and full-time equivalency requirements associated with recurring budgetary reports, which are now required by the agency and outlined in the 2500 series of orders. In the time frame of 1985—1990, all descriptive data will be added and will encompass all appropriations and funds that finance FAA activities.

(3) **Functions to be Supported.** Budget management will support the Call for Estimates (formulation phase), the Five Year Program (formulation phase), quarterly reviews (execution phase), the Call for Actuals, National Summary of Program Requirements, preparation of the President's budget, Congressional justifications, and tracking obligation data (execution phase).

(4) **Access to System.** The Office of Budget, program offices, and regions/centers will have access to the system.

(5) **Interfaces.** The budget management system, a function of all program and staff offices, will need to interact with all systems providing financial, staffing, and workload information. This includes, among others, UAS, UPS, PMIS, Materiel Resources, and the Maintenance Management System (MMS).

b. Financial Accounting

(1) Goals.

- To integrate with the budget execution process to assure that amounts apportioned and allotted do not exceed authorized amounts;
- To optimize UAS to satisfy all legislative and regulatory requirements and information needs of the agency;
- To expand cost accounting and include productivity measures; and
- To improve control over inventory and fixed assets by developing and improving automated interfaces between financial resource files and property accounting files.

(2) **Scope of Data Base.** This data base will consist of: appropriations, apportionments, allotments, authorized fund transfers, anticipated and realized reimbursements, Treasury Warrants, portions of budgetary resources not available pursuant to a specific provision of law, restorations and write-offs, deferred budgetary resources, contract and liquidating authority, and planning data. All of the above will be classified by appropriation or fund. The data base will include all accounting information or data to satisfy accounting requirements and the requirements of other functions needing financial resource information. The accuracy and integrity will be maintained by extensive internal controls and edits.

(3) **Functions to be Supported.** All functional areas that have indicated a need for information from the Financial Resources Information area will be supported.

(4) **Access to System.** The system will be accessible to all users online as rapidly as possible, consistent with information needs and internal control and security requirements.

(5) **Interfaces.** The accounting system will interface with all systems that either generate economic transactions or have a requirement for financial information. This includes: budget, inventory, personal and real property, procurement, payroll, productivity measurement, and decision support systems.

c. Payroll

(1) **Goals.** The agency plans to increase the timeliness of both the payment of personnel compensation and benefits and the accounting for these costs through integration with other systems and expanded use of direct data entry.

(2) **Scope of Data Base.** The data base will cover data elements applicable to personnel, payroll, budget, and accounting.

(3) **Functions to be Supported.** The basic functions of personnel management, pay and compensation calculation, budget execution, and all related accounting activities will be supported.

(4) **Access to System.** Access will be from all designated operating locations in the agency. This will permit data entry to be decentralized to the site at which action is being taken and will provide flexible output to these same sites.

(5) **Interfaces.** Automation in these activities will interface with the budget management system, UAS, and PMIS.

d. Other Fiscal Services

(1) **Goals.** The FAA plans to make use of advanced automation techniques to enhance efficiency in performing fiscal services.

(2) **Scope of Data Base.** The data base will include all open document records that reflect amounts due from FAA to others and amounts due from others to FAA.

(3) **Functions to be Supported.** The examination and management of invoices and claims for goods and services received by FAA and the billing and collection for goods and services provided by FAA will be supported. Also supported will be the preparation of travel orders.

(4) **Access to System.** The system will be accessible by area remote terminals. Entries will be made in logistics divisions for orders of goods and services, in program offices for receiving and providing goods and services, and in accounting offices for receiving invoices and claims.

(5) **Interfaces.** Interfaces will include procurement systems, property systems, the UAS, and the UPS.

702. INFORMATION SYSTEM EVOLUTION

a. Budget Management

(1) **Near Term (To 1985).** During this time, the budget automation effort will be concentrated in primarily two areas: (1) automating the largely manual budget process; and (2) expanding the present, limited automation to capture additional data needs that can be accomplished with little effort and resources. The present manual budgetary system, "spread-sheeting" data received from numerous sources within the agency, will be introduced to automation. The Facilities and Equipment budget requirements system, now automated but using a labor-intensive punch card system, will be moved to agency in-house computers and extended in scope to areas where present study has proven it can be more cost effective and efficient. Finally, enhanced automation efforts scheduled for completion in the intermediate time periods will be started.

(2) **Intermediate Term (To 1990).** A number of modular projects that will be started in the near term will be completed in the intermediate term. The agency plans to interface the Facilities and Equipment budget automation system with the UAS, Facilities and Equipment Physical Status Reporting System (FERS), and other Facilities and Equipment management systems. The budget processes of major FAA programs, such as Air Traffic, Airway Facilities, Flight Standards, and other programs financed by the Operations Appropriation, which will have been introduced to automation in the near term, will be enhanced in the intermediate term by interfacing the Operations Appropriation with selected other FAA management information systems. Alternative budget scenarios will be more readily available for evaluation by budget officials and top agency management. The Metropolitan Washington Airports Operation and Maintenance Appropriation System will be interfaced with management information contained in other data systems, such as property systems and PMIS. The Airport Grant Program that requires a multiplicity of management information to control project status, obligations, and outlays will be moved to a system that will provide online information for budget execution.

(3) **Long Term (To 2000).** The agency's plans in the long term will extend the agency budget system into a real-time, computerized data base management information system providing nearly all data relating to all phases of the budget. Agency management information systems that will not have been previously integrated, such as the Research and Development Management Information System, will be integrated with the budget management system. Data transfer will be electronic with hard copy printing for record purposes only. Personnel will be able to analyze, review, and visualize the effects of alternative resource options.

b. Financial Accounting

(1) **Near Term (To 1985).** This period will be dominated by efforts to complete the implementation of the initial design of the UAS. Concentrated effort will also be placed on modifications necessary to meet legislative and regulatory requirements that were imposed during the UAS design stage after a freeze was imposed on design changes. Efforts to design automated cost accounting and chargeback applications are already underway.

(2) **Intermediate Term (To 1990).** Major efforts during this period will be to integrate all accounting and reporting for the Airport Grant Program into the UAS. Integration of UAS with the property and inventory management systems will begin. A broad-based cost accounting and productivity measurement system will be installed. The UAS data base will become more available to nonfinancial users, and provision will be made for direct update by program offices to make the process of administrative control of funds more timely and less labor-intensive.

(3) **Long Term (To 2000).** Efforts will be concentrated on making UAS a part of a total data base management information system by developing automated data and information exchange capabilities with all information areas not addressed in the preceding time period.

c. Payroll

(1) **Near Term (To 1985).** Time and attendance processing will be made less labor-intensive and more current. Wherever economical, most Departmental employees that are not paid by UPS in 1983 will be brought under the UPS. The data exchange between PMIS and UPS will be improved.

(2) **Intermediate Term (To 1990).** Labor distribution processing required for cost accounting will be made more efficient. The problems of timing and data differences between the UPS and the PMIS will be eliminated by the establishment of a single data base.

(3) **Long Term (To 2000).** The UPS processes developed between 1983-1990 will stabilize in this period.

d. Other Fiscal Processes

(1) **Near Term (To 1985).** Fiscal processes will continue in basically the same manner as present.

(2) **Intermediate Term (To 1990).** Fiscal processes will be made more efficient and responsive through the use of advanced automation.

(3) **Long Term (To 2000).** Improvements of fiscal processes developed in the intermediate term will stabilize in this period.

703. RETURN ON THE INVESTMENT

This plan will result in Financial Resources Information that is more accurate, timely, and useful. It will

make the process of collecting, assembling, and producing the information more efficient and less labor-intensive. The cost of performing financial services and of providing Financial Resources Information will be reduced.

Table 7.1 SUMMARY OF COSTS AND SAVINGS
(Dollars in Millions)

	1983	1985	1990	2000
Cumulative Savings	0.0	0.7	43.8	168.2
Cumulative Project Costs	4.8	15.8	24.8	27.5
Net	(4.8)	(15.1)	19.0	140.7
Discounted Cumulative Savings	0.0	0.6	26.6	65.6
Discounted Cumulative Project Costs	4.8	14.3	20.4	21.4
Discounted Net	(4.8)	(13.7)	6.2	44.2
Direct FTE Cumulative Savings	1	9	120	131

704. IMPACTS

a. Organizational. As a result of this plan, organizational relationships may change. The budget, accounting, payroll, and voucher examination functions will require the application of fewer resources in the manual processes of data entry, calculation, and information presentation. The data entry process will, in some cases, migrate to the program offices that generate financial activity and use financial information. More attention will be devoted to the analysis and interpretation of financial information. Possible organizational changes will be examined during the design phases of each of the projects included in the plan.

b. Program. Program offices will have a more direct involvement in the processes leading to the production of Financial Resources Information. They will be less dependent on the budget and accounting organizations; however, they will be more dependent on the Financial Resources Information systems.

705. SUMMARY OF CHANGES

a. Procedural. The procedural changes resulting from this plan will be significant. Much financial activity will be recorded directly by program organizations, and the format and timing of information output will be determined by the user. Greater reliance will be placed on using automated data and information exchange instead of duplicate processing through independent systems. Heavy reliance will be placed on automated internal accounting controls.

b. Automated Data Processing (ADP). Additional data processing equipment, primarily in the form of more cathode-ray-tube terminals and associated printers and optical character recognition equipment, will be required to implement this plan. More communication lines will be required to accommodate the widely distributed terminal network. The in-house minicomputers will be used as a buffer area for backlogs and will be employed to make preliminary edits. Additional host

computer capacity and communications capabilities may be required to accommodate the flexible processing required by report program generation and expanded use of online inquiry. Dependence will be reduced on the development, maintenance, and modification of specialized programs for the production of fixed format reports. Extensive ADP system software will be required to accept and exchange all types of financial information.

Section 2. PROJECTS SUMMARY

TABLE 7.2 PROJECT NAMES, SCHEDULES, RELATED AGENCY OBJECTIVES, AND OFFICE OF PRIMARY RESPONSIBILITY (OPR)

<i>Projects</i>	<i>Start</i>	<i>Completion</i>	<i>Related Agency Objectives</i>	<i>OPR</i>
BUDGET PROJECTS:				
• Streamline F&E Call for Budget Estimates	1983	1983	4, 8	ABU
• Upgrade and Expand Automated F&E Budget System	1983	1984	4, 8	ABU
• Automation of FAA Annual Appropriations Budget	1983	1986	4, 8	ABU
• Automation of Metropolitan Washington Airports (MWA) Budget System	1984	1987	4, 8	ABU
• Automate Airport Grants Budget System	1985	1987	4, 8	ABU
• Interface F&E Budget System with Other FAA Management Information Systems	1985	1988	4, 8	ABU
ACCOUNTING PROJECTS:				
• Automated Data Processing (ADP) Chargeback System	1983	1984	4, 8	AMS
• Aircraft Management Information System (AMIS)—Resource Management	1983	1985	4, 8	AVN
• Cost Accounting for Resource Management	1983	1987	4, 8	AAA
• Optimize the Uniform Accounting System (UAS)	1985	2000	4, 8	AAA
• Interface Allotment System with UAS	1985	1986	4, 8	AAA
PAYROLL PROJECTS:				
• Departmentwide Consolidated Uniform Payroll System	1983	1984	4, 8	AAA
• Time and Attendance (T&A) Report Entry	1983	1985	4, 8	AAA
• Coordinate PMIS/UPS Procedures	1984	1985	4, 8	AAA
• Integrated PMIS/UPS Data Base	1985	1988	4, 8	AAA
FISCAL SERVICES PROJECT:				
• Automate Fiscal Services	1985	1987	4, 8	AAA

1. Maintain or Improve Current Levels of U.S. Aviation Safety
2. Prepare and Implement Programs in Support of the Agency's Human Relations Policy
3. Continue the FAA's Long Range Planning Program
4. Complete Implementation of the Management Organization and Establish the Systems and Procedures Needed to Assure Efficient Allocation of Human and Fiscal Resources
5. Aggressively Pursue Opportunities to Reduce, Eliminate, or Otherwise Improve the Agency's Regulatory Burden
6. Improve FAA's Preeminence as the World Aviation Authority
7. Continue and Expand the Agency Program for Employment and Advancement of Handicapped, Minorities, and Women Employees
8. Provide All Services of the FAA, Excluding the Airways Modernization Program, at a Cost Not Greater than the 1980 FAA Budget, Adjusted for Inflation

FIGURE 7.1 AGENCY OBJECTIVES FOR FY 1983

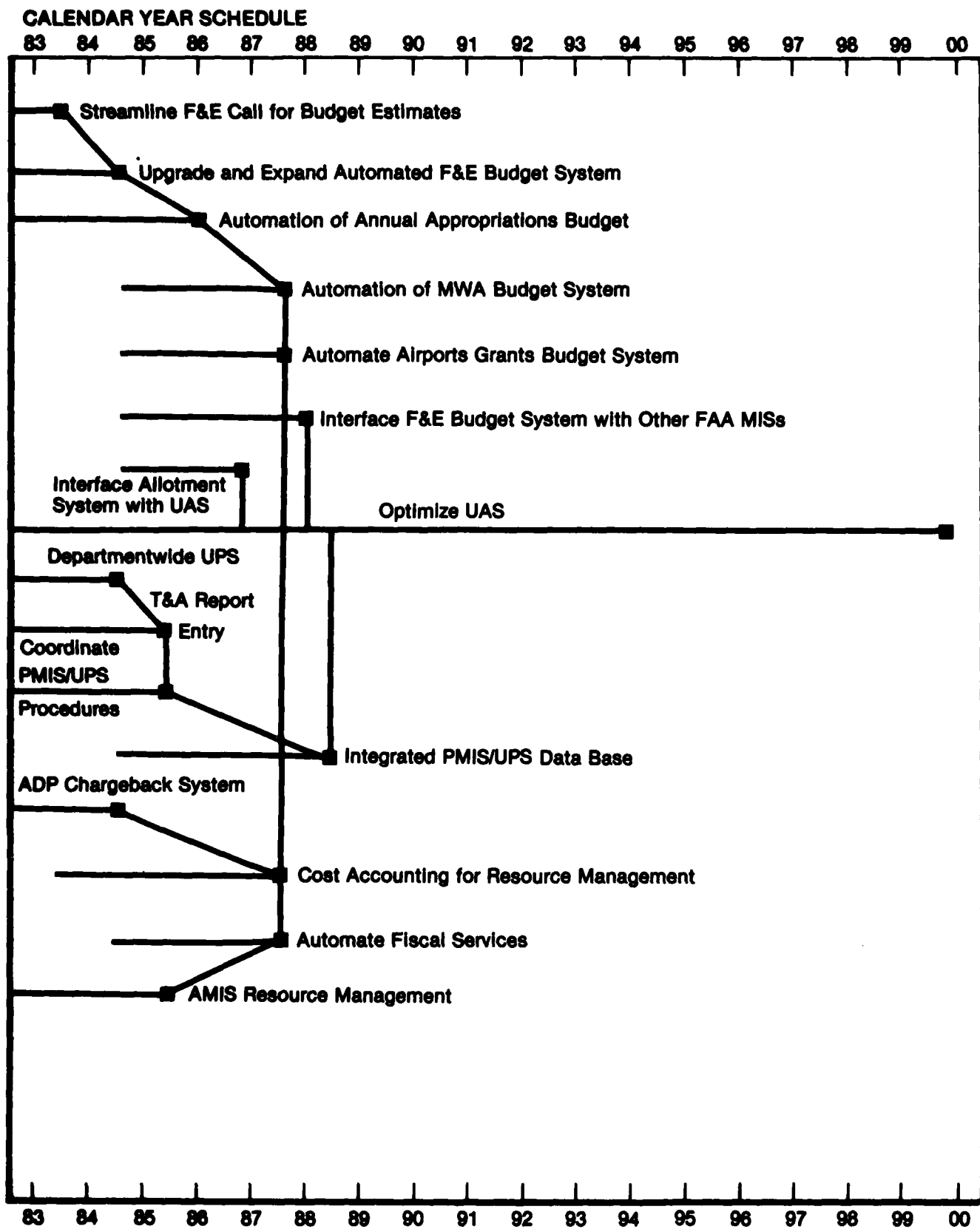


FIGURE 7.2 PROJECTS EVOLUTION

Section 3. SPECIFIC PROJECTS

706. PROJECT: Streamline F&E Call for Budget Estimates

a. Purpose: To further align funding requests from regions, centers, and Headquarters with the revised NAS Plan. The overall objective is to continue to reduce the amount of paperwork submitted in response to the annual Call for Estimates.

b. Approach: The Interservice Working Group (ISWG) will ensure, when formulating the next Call for Estimates, that the Call agrees with the revised NAS Plan. Particular consideration will be given by offices sponsoring national programs to reducing narrative justifications and other forms submitted by regions and centers.

c. Equipment Requirements and Implications: This project will not require a change in existing equipment.

d. Schedule:

Develop and implement improvements 1983

e. Related Projects and Activities: Upgrade and Expand Automated F&E Budget System project

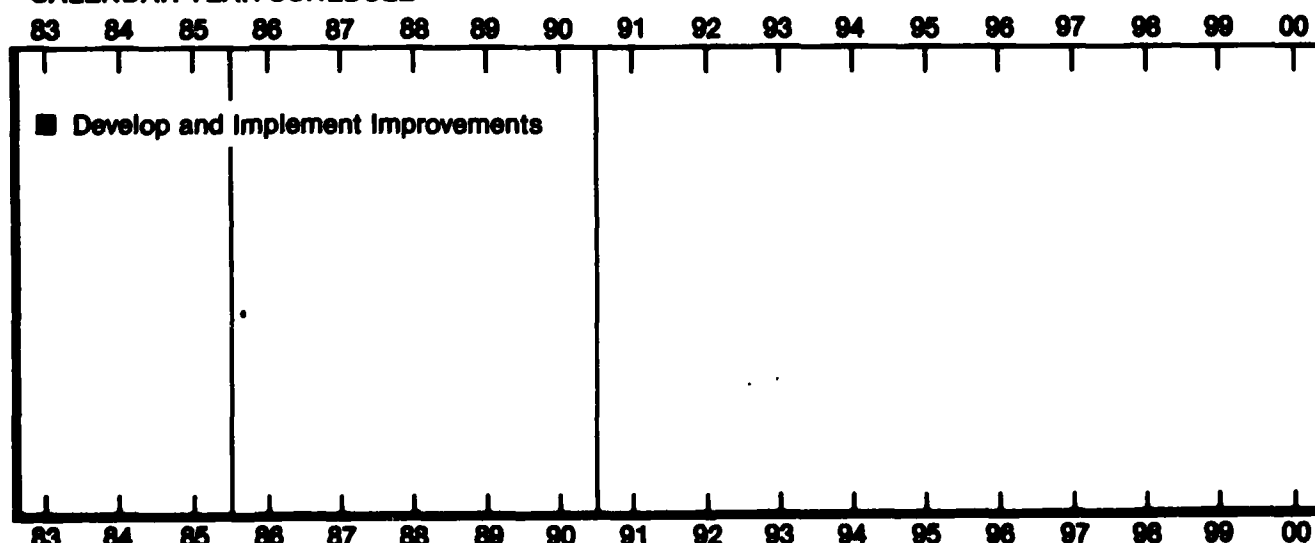
f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars) \$62.4

(2) Annual savings after complete implementation \$21.7

CALENDAR YEAR SCHEDULE



707. PROJECT: Upgrade and Expand Automated F&E Budget System

a. Purpose: To provide organizations responsible for implementation of the F&E program an improved data base of funded projects and to keep track of candidate projects submitted for funding. This system will be an important aspect of accounting for funds appropriated to FAA to modernize the airspace system in accordance with the NAS Plan.

b. Approach: The present ADP timesharing system will be updated and moved to FAA's in-house computer system to reduce costs, to utilize the already established communications network, and to facilitate interfacing with other FAA systems.

c. Equipment Requirements and Implications: Terminals will be required in F&E program offices for update and inquiry purposes.

d. Schedule:

- | | |
|-----------------------------|------|
| (1) Define requirements | 1983 |
| (2) Complete implementation | 1984 |

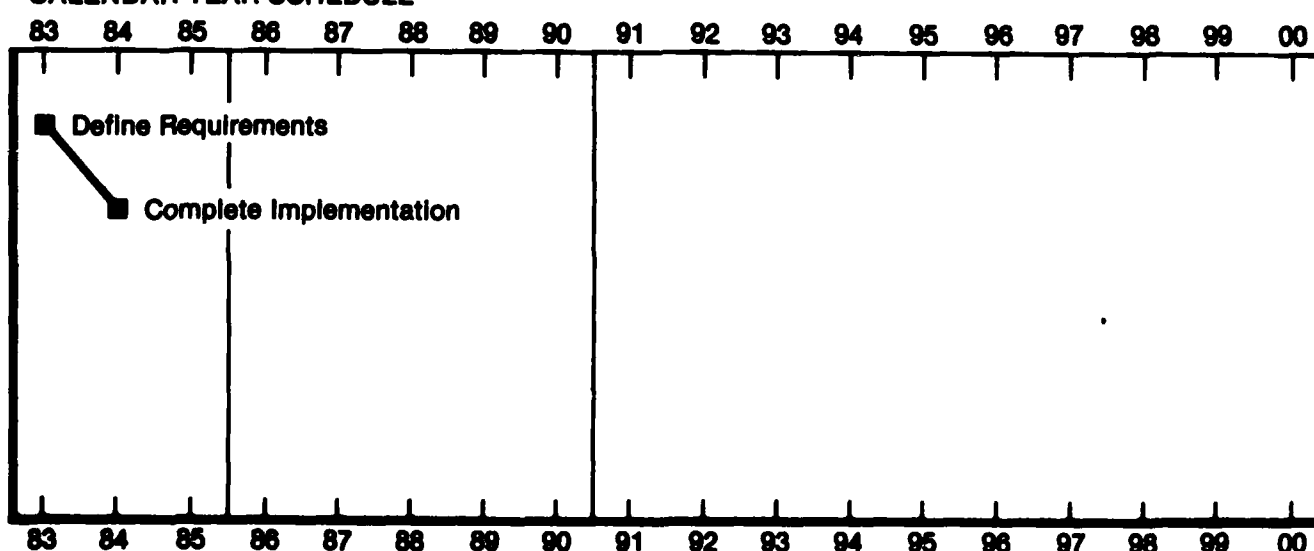
e. Related Projects and Activities: UAS, Facilities and Equipment Physical Status Reporting System File (FERS), and APM Obligation Plan

f. Costs:

Dollars in Thousands

- | | |
|--|---------|
| (1) Development costs (based on 1983 dollars) | \$311.8 |
| (2) Annual savings after complete implementation | \$65.1 |

CALENDAR YEAR SCHEDULE



708. PROJECT: Automation of FAA Annual Appropriations Budget

a. Purpose: To substantially reduce the employee-year workload and paper processing involved in the annual appropriations budget formulation, presentation, and execution, and also to improve the financial modeling "what if" capabilities.

b. Approach: This project will be accomplished in three phases:

(1) Phase I will involve identifying the budgetary data requirements in terms of output, need for the data, frequency, and source for Washington Headquarters, regions, and centers. The demands of all review levels will be assessed. The data will be assembled in usable output formats including models for various scenarios of different circumstances and "what if" games.

(2) During Phase II, budget processes that are best served by automation will be identified by using a modular system approach.

(3) In Phase III, the modules determined in Phase II will begin to be introduced with the total installed system by 1986.

c. Equipment Requirements and Implications: Interactive online computational support for budget offices and program offices at regional, center, and Headquarters organizational levels with communications

support between organizational entities is required. In the near term, the central administrative computer and communications complex will be used for all ADP support. As the competition for central ADP resources increases with the introduction of new ADP projects, more local support (i.e., organizational work stations and microprocessors) may be utilized to satisfy each organization's internal data and word processing requirements. The local support will tie into the centralized communications network for reporting and interfacing with other agency data bases and systems.

d. Schedule:

(1) Phase I —Define requirements	1983
(2) Phase II —System design	1984
(3) Phase III—System implementation	1986

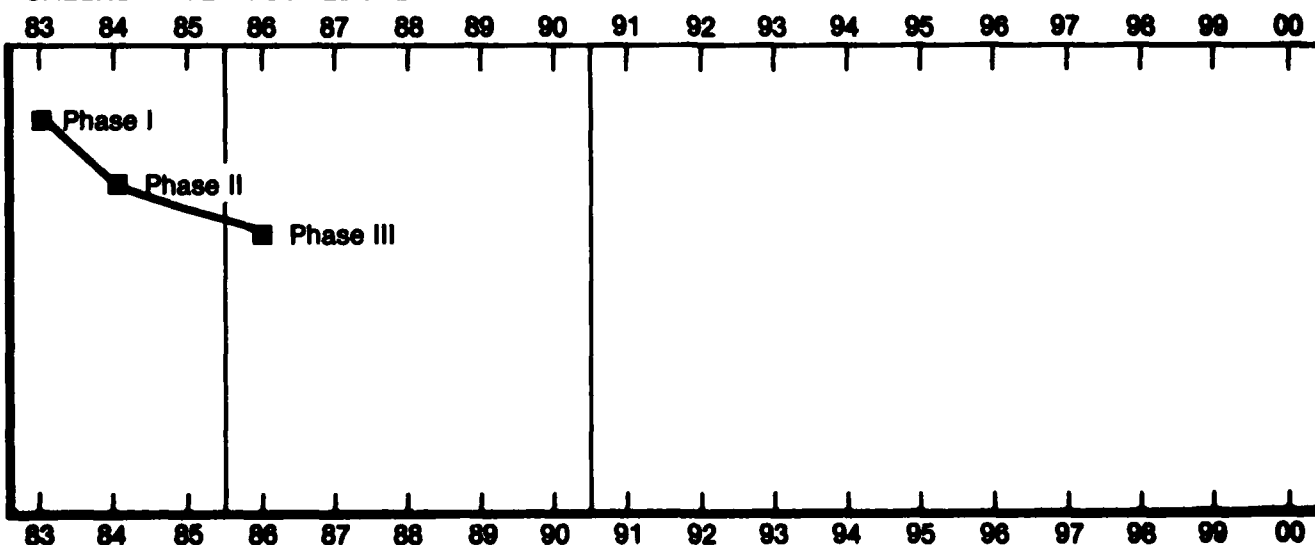
e. Related Projects and Activities: This project assumes full implementation of UAS. Because UAS, PMIS, and UPS are target systems for interfacing, this project indirectly relates to the activities associated with those systems in the 1985/1986 time period.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$10,505.0
(2) Annual savings after complete implementation	\$397.9

CALENDAR YEAR SCHEDULE



700. PROJECT: Automation of Metropolitan Washington Airports (MWA) Budget System

a. Purpose: To gather, consolidate, summarize, and present financial and budgetary data; to permit "what if" data manipulation; to produce automated financial operating plans; and to permit continued review and analysis of operating results.

b. Approach: Conduct requirements analysis to determine data sources and users; identify management and operating organization needs and transactions; design and implement an automated system to consolidate, manipulate, and extract data at eight locations at Washington and Dulles International Airports.

c. Equipment Requirements and Implications: ADP support, connected by a local area network to permit flexible communications when needed, is required at eight locations. Commercially available software will

satisfy some needs. Communications with other agency systems will be necessary. Local, small scale computational support will be needed to accommodate specific or unique needs.

d. Schedule:

- | | |
|--|------|
| (1) Define requirements | 1984 |
| (2) System development | 1985 |
| (3) Interface and integrate with other systems | 1987 |

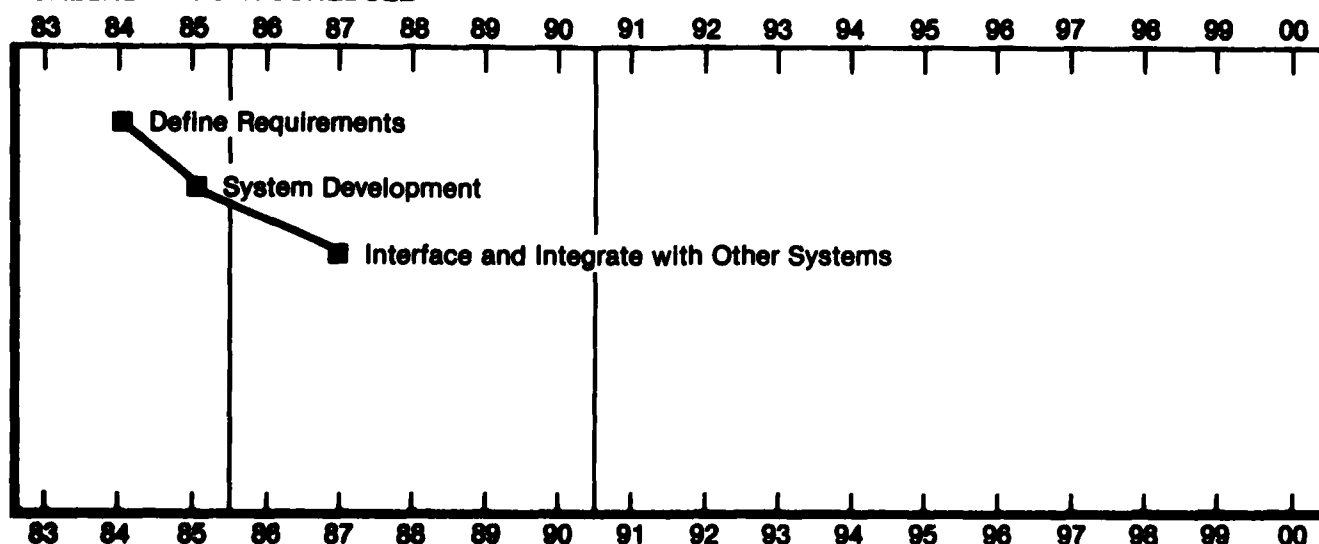
e. Related Projects and Activities: Automate FAA Annual Budget, interface with Investment System with UAS, and update UAS for certain accounts

f. Costs:

Dollars in Thousands

- | | |
|--|---------|
| (1) Development costs (based on 1983 dollars) | \$734.3 |
| (2) Annual savings after complete implementation | \$134.5 |

CALENDAR YEAR SCHEDULE



710. PROJECT: Automate Airport Grants Budget System

a. Purpose: To automate Airport Improvement Program (AIP) project status financial and budget information. This system will tie together budget data and project financial information. It will include planned versus actual obligations and outlays by fiscal year, by region, and by project. Outlay information will include the payout of prior year funds. Allotment data will be provided to the grants system.

b. Approach: After system requirements and time frames are determined, a pilot demonstration will be implemented between Headquarters and one region. After the system has been debugged, it will be expanded to the other regions.

c. Equipment Requirements and Implications: Terminals will be required in the regions for update and inquiry purposes.

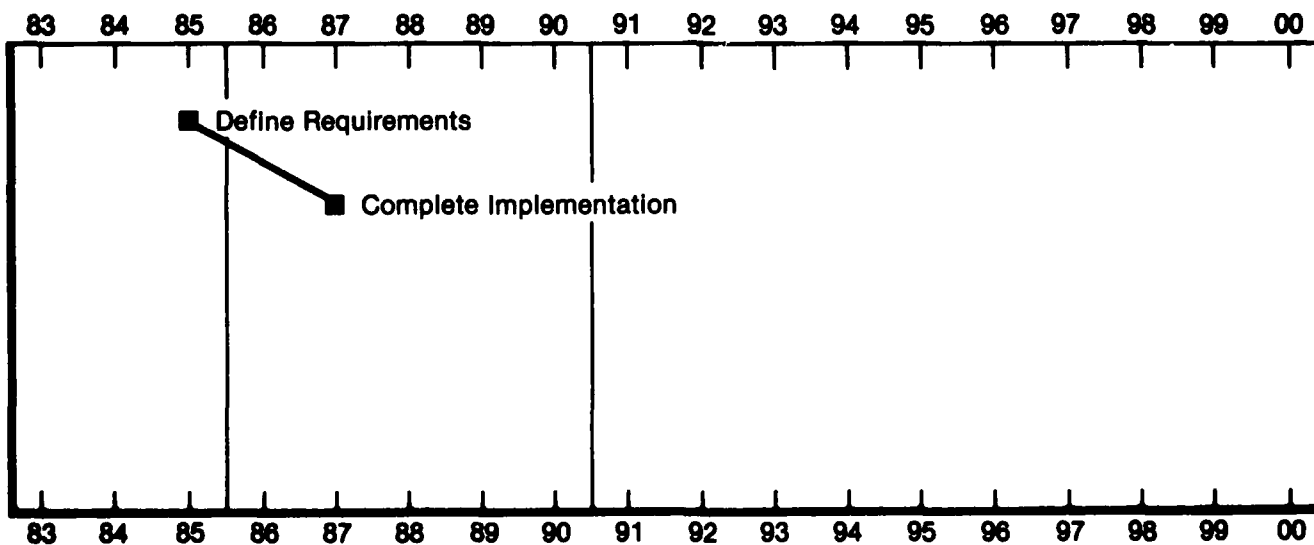
d. Schedule:

- | | |
|-----------------------------|------|
| (1) Define requirements | 1985 |
| (2) Complete implementation | 1987 |

e. Related Projects and Activities: This system should interface with the Office of Airport Planning and Programming (APP) system, UAS, and the Automated Allotment System.

f. Costs:*Dollars in Thousands*

- | | |
|--|----------|
| (1) Development costs (based on 1983 dollars) | \$280.4 |
| (2) Annual savings after complete implementation | (\$73.2) |

CALENDAR YEAR SCHEDULE

711. PROJECT: Interface F&E Budget System with Other FAA Management Information Systems

a. Purpose: To share common F&E project data between various systems thereby eliminating the manual input of data.

b. Approach: Identify all systems which use F&E project data. Starting with the accounting system, phase in the integration of the F&E Budget System with other FAA management information systems.

c. Equipment Requirements and Implications: No additional equipment is required.

d. Schedule:

- | | |
|-----------------------------|------|
| (1) Define requirements | 1985 |
| (2) Complete implementation | 1988 |

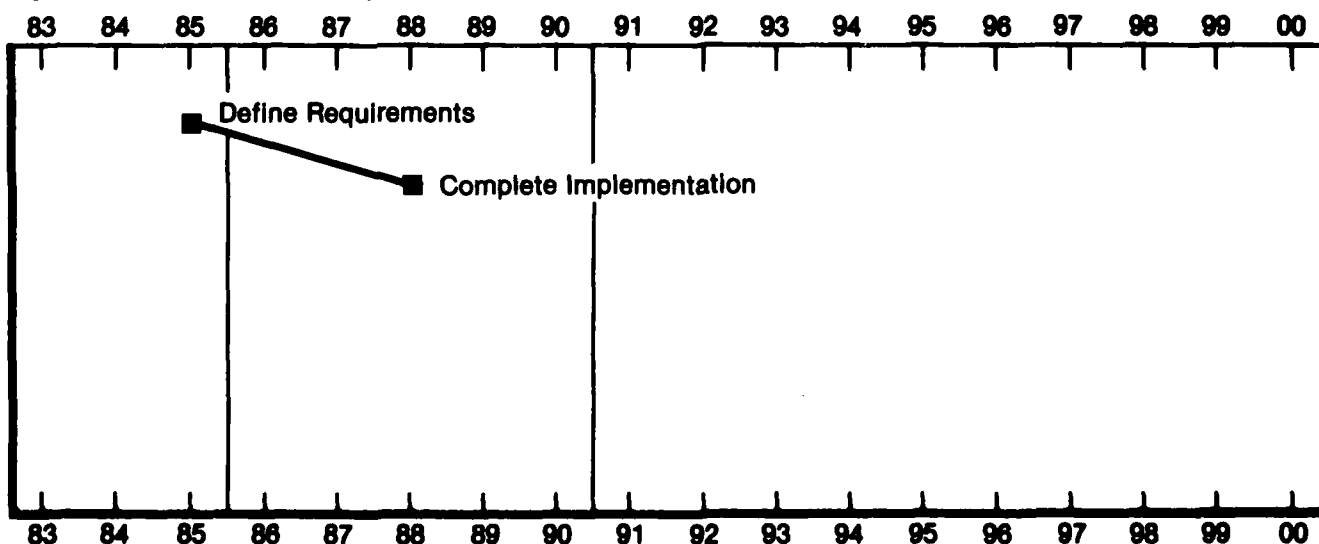
e. Related Projects and Activities: UAS, FERS, and APM Obligation Plan

f. Costs:

Dollars in Thousands

- | | |
|--|---------|
| (1) Development costs (based on 1983 dollars) | \$873.0 |
| (2) Annual savings after complete implementation | \$347.4 |

CALENDAR YEAR SCHEDULE



712. PROJECT: Automated Data Processing (ADP) Chargeback System

a. Purpose: To convert the agency's ADP organization to be completely reimbursable with users paying for services rendered.

b. Approach: Design, develop, and install a charging system at six FAA regional data centers that (1) accounts for the full cost of operating each regional data center; (2) allocates and reports all costs to users according to services received; (3) recovers the costs from external users; and (4) recovers costs from internal users when deemed appropriate by FAA.

c. Equipment Requirements and Implications: No new equipment will be required. The charging system will be compatible and will produce identical FAA management reports. Modifications of the charging system at the FAA Aeronautical Center may be needed so that it

will produce identical or compatible FAA management reports to those produced by charging systems at other locations.

d. Schedule:

(1) System development	1983
(2) Complete implementation	1984

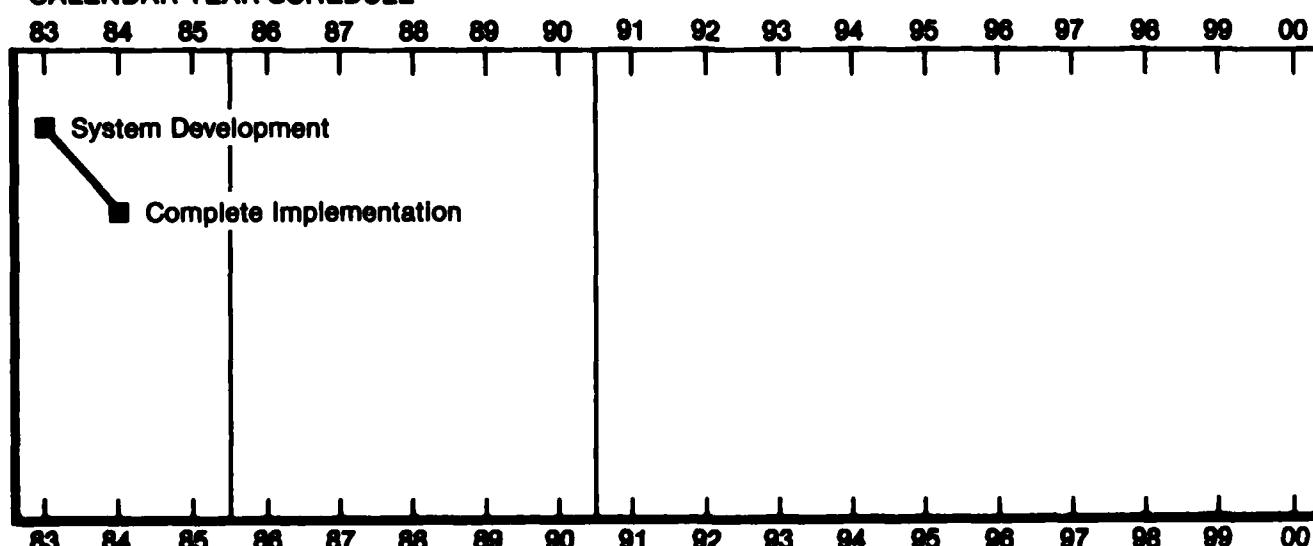
e. Related Projects and Activities: The main FAA data processing center at the Aeronautical Center is negotiating to purchase a commercial ADP costing software package called "PARS."

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$1,277.4
(2) Annual savings after complete implementation	\$809.2

CALENDAR YEAR SCHEDULE



713. PROJECT: Aircraft Management Information System (AMIS)—Resource Management

a. Purpose: To provide an effective data exchange between AMIS and other master data systems such as UAS, PMIS, UPS, and LIS. The effective exchange of data between these systems will reduce the laborious process of manually reviewing numerous source documents each time the Aircraft Program reports its costs and/or personnel status. It will also provide the means of computing accurate cost per flight hour standards.

b. Approach: Develop batch mode transfer mechanisms for all affected systems.

c. Equipment Requirements and Implications: None

d. Schedule:

- | | |
|---|------|
| (1) AMIS/UAS exchange of personnel services costs | 1983 |
| (2) AMIS/PMIS and UPS exchange of personnel management data | 1984 |
| (3) AMIS/UAS and LIS exchange of materiel costs | 1985 |

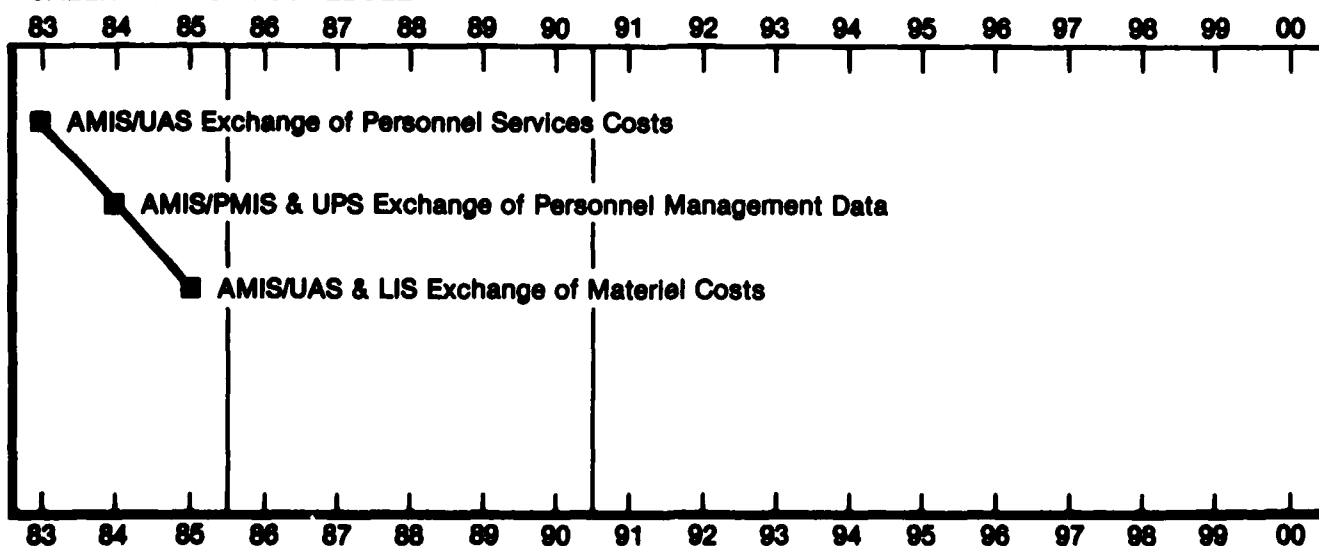
e. Related Projects and Activities: UAS, PMIS, UPS, and LIS

f. Costs:

Dollars in Thousands

- | | |
|--|---------|
| (1) Development costs (based on 1983 dollars) | \$201.8 |
| (2) Annual savings after complete implementation | \$82.9 |

CALENDAR YEAR SCHEDULE



714. PROJECT: Cost Accounting for Resource Management

a. Purpose: To design and develop a generalized system for accumulating planned and actual labor hours; costs of resource applications such as labor, materiel, and contractual services; and nonfinancial measures of workload accomplishment.

b. Approach:

(1) Examine existing data collection and processing systems to identify data and reports that support monitoring and control of resources associated with the NAS revitalization effort. Upon completing the examination, determine the extent of system change necessary to implement the processes and to provide management with the costs and benefits.

(2) Make cost-effective system changes that will facilitate the production of information necessary to monitor and control the application of resources to the NAS revitalization effort.

(3) Provide system users with the capability to retrieve and analyze manpower and other resource

application data for measuring productivity and controlling the resources associated with the performance of FAA missions and functions.

c. Equipment Requirements and Implications: Scanners, terminals, and CPU capability

d. Schedule:

(1) Complete analysis of existing data collection and processing systems	1983
(2) Complete system development	1984
(3) System implementation	1987

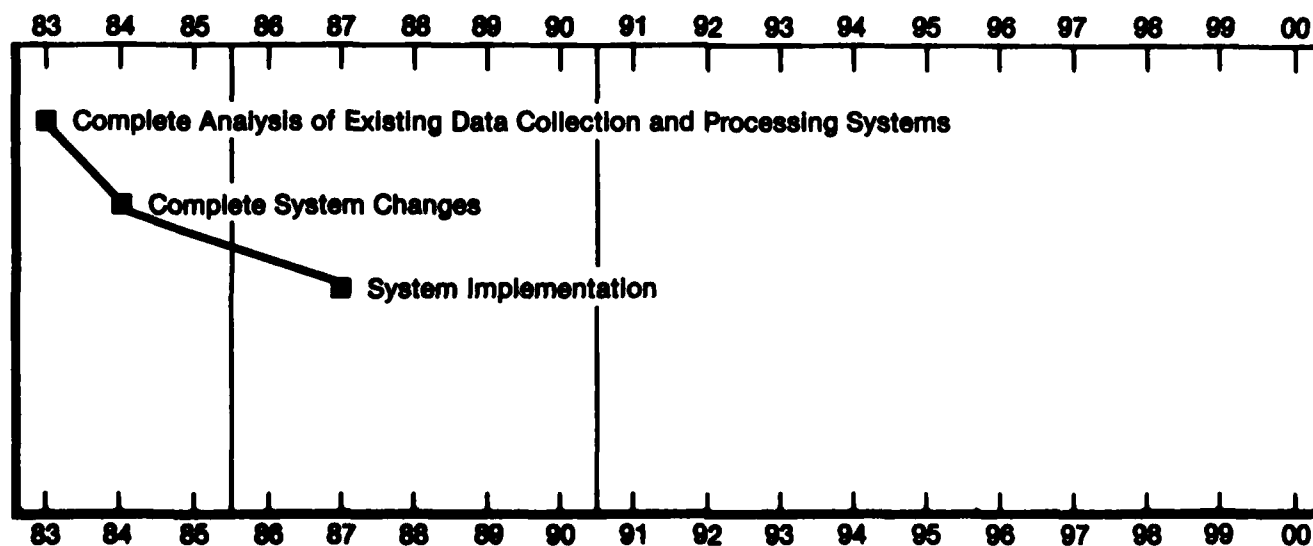
e. Related Projects and Activities: PMIS, UPS, UAS, and FERS

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$1,703.3
(2) Annual savings after complete implementation	\$1,078.8

CALENDAR YEAR SCHEDULE



715. PROJECT: Optimize the Uniform Accounting System (UAS)

a. Purpose: A recent survey of all operating elements of the agency indicated there is a need for financial management information at all management levels on a daily basis. Additionally, there are requirements for cost accounting and productivity measurement data. The purpose of this project is to optimize UAS to the point that it will efficiently and effectively satisfy those requirements and to make the financial data contained in UAS accessible to all users. This will be done by utilizing the most current technology and methods. Single source input will be used, and data will be exchanged with other systems, with all input subject to the most critical edits and internal control.

b. Approach: The logic and order in which to complete and implement this project is as follows:

- (1) Complete implementation of the UAS
- (2) Complete enhancements to UAS
- (3) Incorporate all reporting requirements for the Grants-in-Aid programs
- (4) Migrate the front-end loading of UAS to regional computers
- (5) Interface UAS with property systems
- (6) Open UAS to users
- (7) Interface UAS with all other systems

c. Equipment Requirements and Implications:

(1) The equipment needed for UAS implementation has been obtained and is in place. Upon migration of UAS data entry to regional computers, however, a set of terminals and printers with communication links has to be installed at each location with a need for access to the UAS data base for inquiry and input.

(2) Implications of this project for the agency are more efficient scheduling for input, processing, report production, and inquiries for all users and operators of the data base; improved fund control; reduction of document mailing and storage requirements; and potential elimination of "cuff" record keeping. Since data input to the accounting system will be performed at multiple sources and locations, sound and effective internal control and audit trails will become an essential part of the integrated system.

d. Schedule:

	Start	Completion
(1) Complete Uniform Accounting System (UAS) implementation	1983	1984
(2) Complete enhancements to UAS	1984	1985
(3) Convert ADAP to UAS data base	1985	1986
(4) Migrate data entry to regional computers	1985	1986
(5) Interface UAS with Fixed Asset Systems	(1985)	(1991)
(a) Personal Property In-Use Management System	1985	1986
(b) Project Materiel System	1987	1988
(c) Logistic and Inventory System (LIS)	1988	1989
(d) Real Property System	1990	1991
(e) Automated Utilization Screening Disposal System (AUSDS)	1990	1991
(6) Open UAS to users	(1986)	(1990)
(a) Limited users for budget, program and other inquiries	1986	1987
(b) Limit users for input of planning data	1987	1988
(c) Limited users for reservation and obligation input and report program generation	1988	1989
(d) All users for report generation plan and fund use input, and report generation	1989	1990
(7) Interface UAS with all other systems	1990	2000

e. Related Projects and Activities: Development and implementation of each of the project phases will be coordinated with other on-going systems development projects as appropriate to complete the overall project. For example, coordination with Budget, Airports, and other program areas are required; coordination with the Logistics Inventory System, Materiel Management System, the Automated Utilization Screening and Disposal System, and other on-going systems are required. For the UAS interface with other systems after 1990, each interface requirement will be separately identified.

Financial Resources

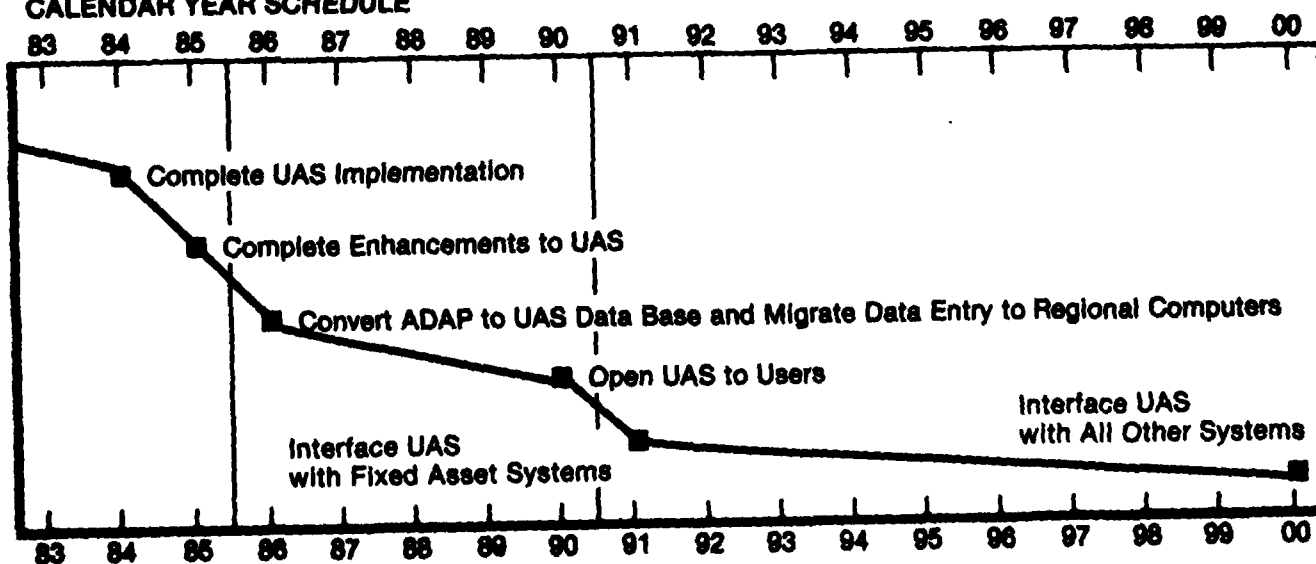
tified as an activity within this project. Interface requirements will be of two types: (1) systems providing data to UAS; or (2) UAS providing data to other systems. Major factors impacting this project will be new program area information systems.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$5,109.7
(2) Annual savings after complete implementation	\$3,236.6

CALENDAR YEAR SCHEDULE



716. PROJECT: Interface Allotment System with UAS

a. Purpose: To eliminate input of budget authorization data into two separate systems.

b. Approach: After UAS is fully implemented, a program will be written that will allow the Budget Allotment System, via in-house equipment, to transmit budget authorizations to Headquarters accounting through UAS. Budget authorizations will be hard copy printed for local use and upon approval by accounting, will be transmitted to each accounting office via the UAS network.

c. Equipment Requirements and Implications: No additional equipment will be needed. An interfacing soft-

ware program will have to be written for both the Budget Allotment and UAS systems.

d. Schedule:

- | | |
|-----------------------------|------|
| (1) Define requirements | 1985 |
| (2) Complete implementation | 1986 |

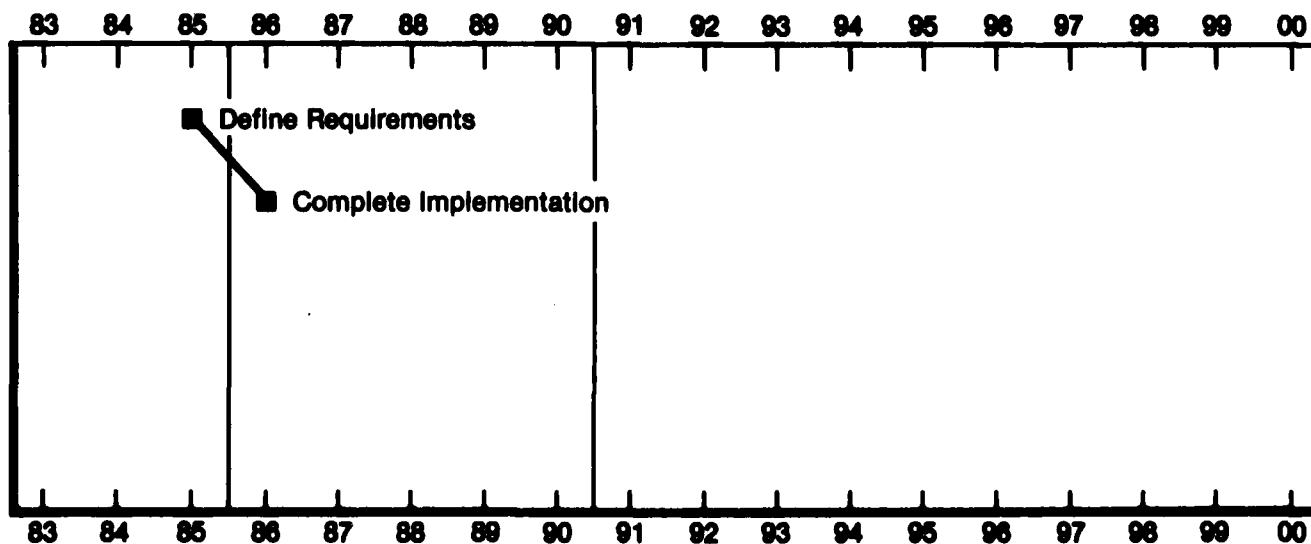
e. Related Projects and Activities: UAS, Budget Allotment System conversion to in-house equipment

f. Costs:

Dollars in Thousands

- | | |
|--|---------|
| (1) Development costs (based on 1983 dollars) | \$425.8 |
| (2) Annual savings after complete implementation | \$269.7 |

CALENDAR YEAR SCHEDULE



717. PROJECT: Departmentwide Consolidated Uniform Payroll System

a. Purpose: To consolidate all DOT payroll systems into a single Consolidated Uniform Payroll System.

b. Approach: Determine the requirements, costs, and benefits of absorbing the Saint Lawrence Seaway Development Corporation and the Maritime Administration into the Consolidated Uniform Payroll System.

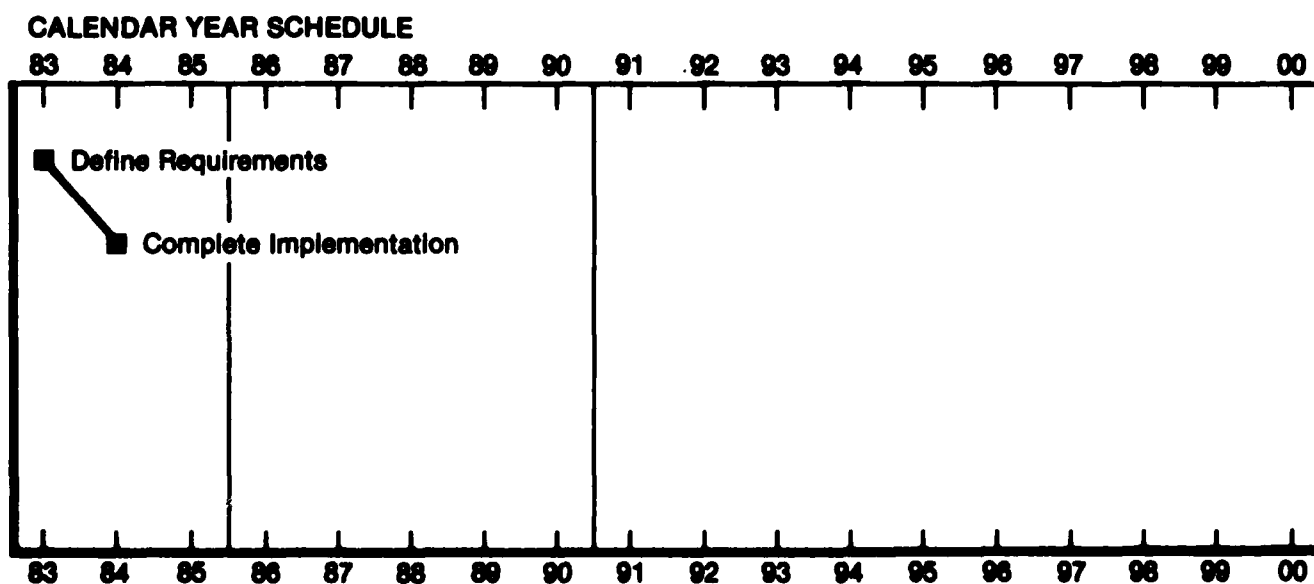
c. Equipment Requirements and Implications: The Saint Lawrence Seaway Development Corporation and the Maritime Administration will require terminals.

d. Schedule:

- | | |
|-----------------------------|------|
| (1) Define requirements | 1983 |
| (2) Complete implementation | 1984 |

e. Related Projects and Activities: Human Resources Information Systems

f. Costs: Development costs will be reimbursable.



**718. PROJECT: Time and Attendance (T&A)
Report Entry**

a. Purpose: To establish procedures and processes to accommodate timely entry of T&A data into the Consolidated Uniform Payroll System.

b. Approach: Implement a more effective and cost beneficial means of entering T&A data, such as expanding the use of optical character recognition (OCR), key entry from field activity, and automated transmission of data from field activities.

c. Equipment Requirements and Implications: Scanners, terminals, electronic time clock, and CPU capability

d. Schedule:

- | | |
|-----------------------------|------|
| (1) Define requirements | 1983 |
| (2) Complete implementation | 1985 |

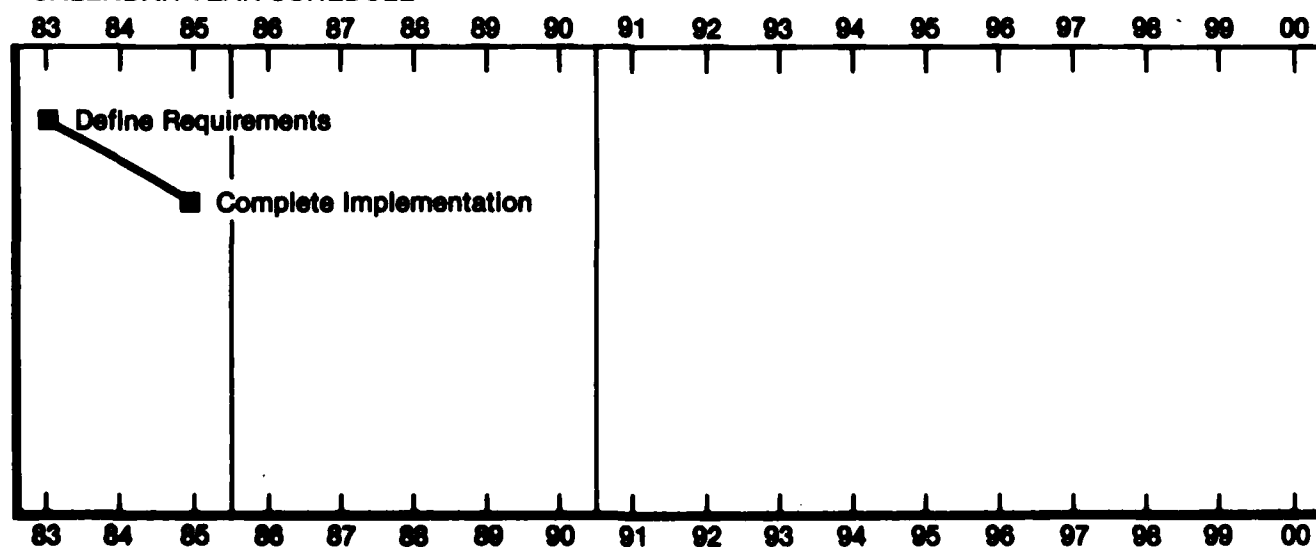
e. Related Projects and Activities: Position Management Cost Accounting System

f. Costs:

Dollars in Thousands

- | | |
|--|-----------|
| (1) Development costs (based on 1983 dollars) | \$1,255.2 |
| (2) Annual savings after complete implementation | \$3,772.8 |

CALENDAR YEAR SCHEDULE



719. PROJECT: Coordinate PMIS/UPS Procedures

a. Purpose: To establish procedures and processes which assure that information required for the payroll function is collected, entered into the system, and validated in a timely manner at the appropriate source.

b. Approach: Analyze each data element for its source, validation criteria, and maintenance costs and benefits to the agency.

c. Equipment Requirements and Implications: None

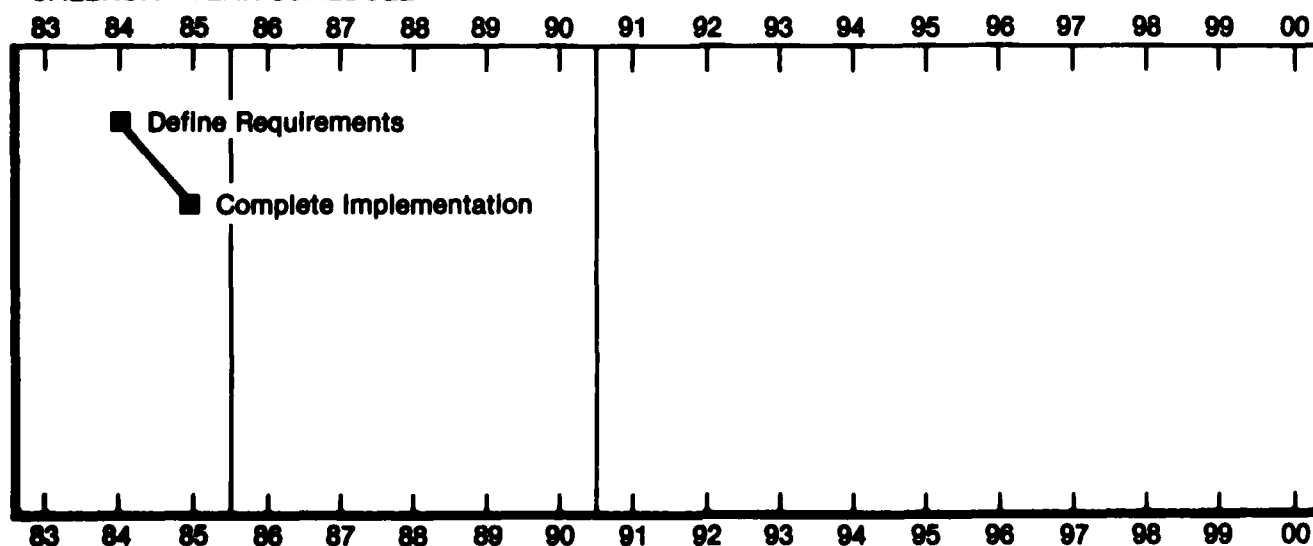
d. Schedule:

- | | |
|-----------------------------|------|
| (1) Define requirements | 1984 |
| (2) Complete implementation | 1985 |

e. Related Projects and Activities: Human Resources Information Systems and Accounting Information Projects

f. Costs:*Dollars in Thousands*

- | | |
|--|--------|
| (1) Development costs (based on 1983 dollars) | \$68.8 |
| (2) Annual savings after complete implementation | \$78.9 |

CALENDAR YEAR SCHEDULE

720. PROJECT: Integrated PMIS/UPS Data Base

a. Purpose: To establish for FAA a single, centralized information base which provides fully automated support of the Personnel Management, Payroll, Budget, and Financial Management functions.

b. Approach: Select the data base and language most appropriate to operate this integrated system and train personnel to operate, install hardware, and implement the system.

c. Equipment Requirements and Implications: A Data Base Management System will be required as well as terminals for the field, region, center, and Headquarters offices.

d. Schedule:

- | | |
|-----------------------------|------|
| (1) Define requirements | 1985 |
| (2) Complete implementation | 1988 |

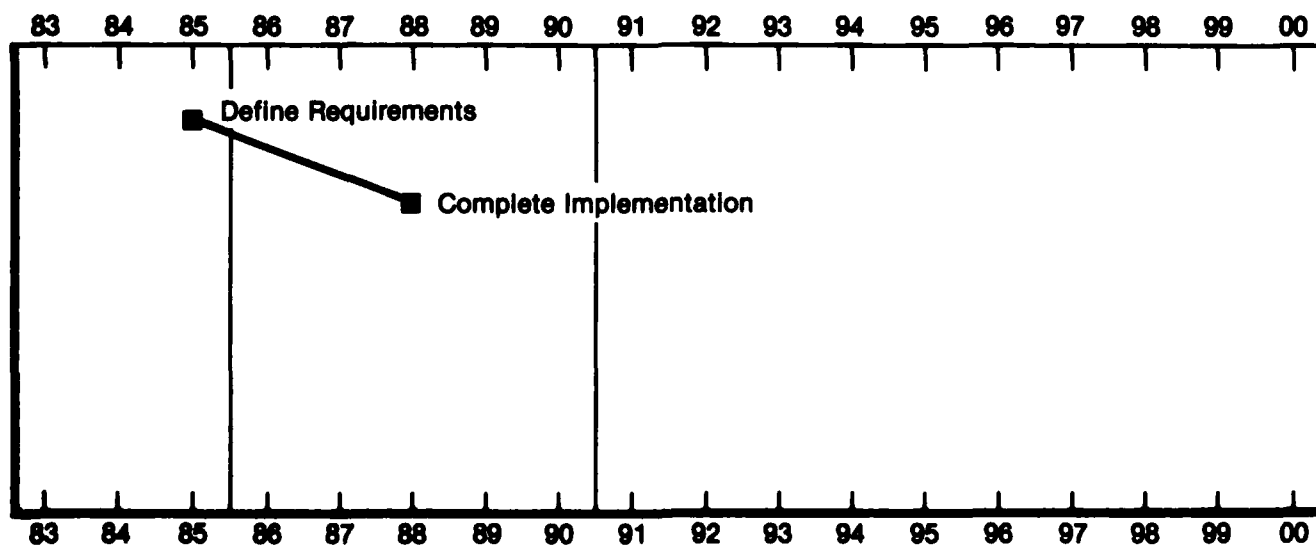
e. Related Projects and Activities: Human Resources Information Systems and Accounting and Budget Activities

f. Costs:

Dollars in Thousands

- | | |
|--|---------|
| (1) Development costs (based on 1983 dollars) | \$618.0 |
| (2) Annual savings after complete implementation | \$710.1 |

CALENDAR YEAR SCHEDULE



721. PROJECT: Automate Fiscal Services

a. Purpose: To assist in the prepayment audit of invoices and claims for reimbursement and expenses; to effect prompt payments of all obligations of FAA in accordance with OMB Circular A-125; and to establish a data base of fiscal elements required in the accomplishment of administrative management functions.

b. Approach: Inquiry user groups will specify their needs. Information will be made available electronically as needed. A survey will be conducted to determine the volume of work requiring automated audit support. Requirements specifications will be developed, and the most effective methods of implementation will be explored.

c. Equipment Requirements and Implications: Scanners, terminals, and CPU capability

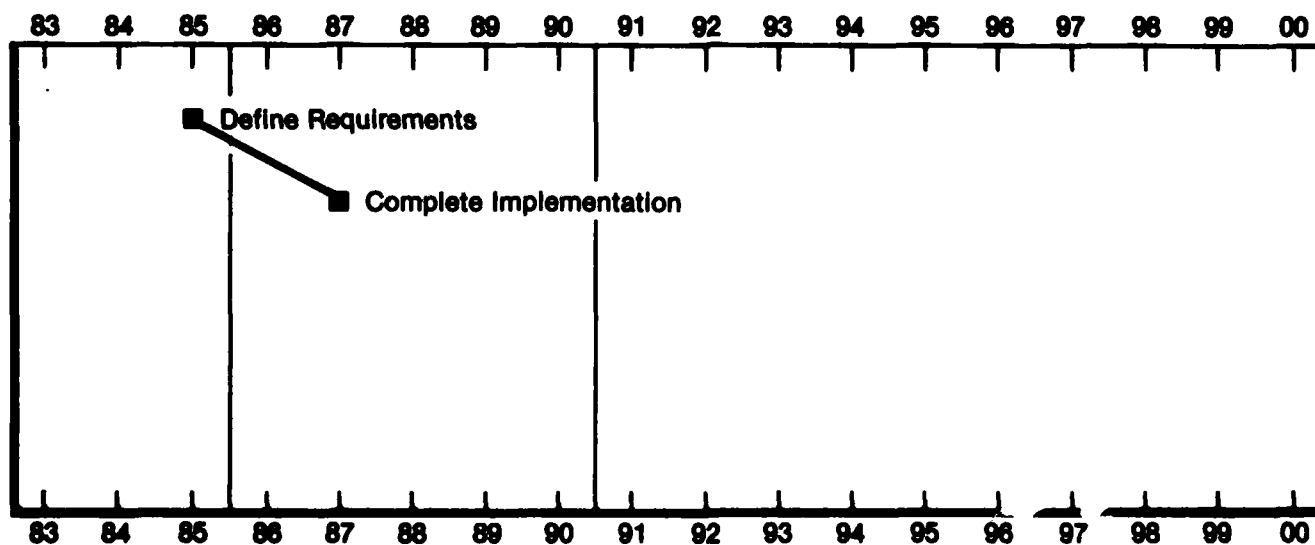
d. Schedule:

- | | |
|-----------------------------|------|
| (1) Define requirements | 1985 |
| (2) Complete implementation | 1987 |

e. Related Projects and Activities: UAS Optimization

f. Costs:*Dollars in Thousands*

- | | |
|--|-----------|
| (1) Development costs (based on 1983 dollars) | \$4,097.8 |
| (2) Annual savings after complete implementation | \$2,581.8 |

CALENDAR YEAR SCHEDULE

8



Human Resources Information Requirements

Chapter 8. HUMAN RESOURCES INFORMATION REQUIREMENTS

Section 1. GENERAL

800. PRESENT ENVIRONMENT, PROBLEMS, AND DEFICIENCIES

Human Resources Information is presently produced and managed at a variety of levels within the FAA. There are automated and manual systems dealing with employment, civil rights and equal employment opportunity, health and safety, pay and position management, training, and labor relations functional activities. The vast majority of these systems do not interface with any other system, which leads to significant duplication of effort and loss of productivity. The following describes the present characteristics of the major elements of Human Resources Information.

a. Employment Information. The agency's present employment information needs are provided by the Consolidated Personnel Management Information System (CPMIS) which has information on all current employees and former employees since 1975. This automated system is managed nationally with daily operations and data base updating primarily carried out by individual personnel offices. Online query and report capability exist. The system interfaces with other systems that utilize personnel information, i.e., Uniform Payroll System (UPS) and Health Information System (HIS). Nevertheless, some large employment related areas are not automated. These include filling vacancies through the Merit Promotion Program (MPP), tracking individual personnel actions, and following the requirements of Uniform Guidelines on Employee Selection Procedures to make adverse impact determinations.

b. Civil Rights and Equal Employment Opportunity (CR/EEO). Although the primary source of CR/EEO information is CPMIS, there are a number of secondary systems in regions, centers, offices, and services that maintain data in conjunction with or independently from the CPMIS data base. Accuracy, accessibility, frequency, and timeliness of CR/EEO data are problems. There is no internal automated source for vendor and grantee affirmative action performance information. Discrimination complaints are monitored by a manual system that is labor-intensive and cannot provide data in a timely and responsive manner.

c. Health and Safety. The agency's occupational health and safety programs currently utilize three automated and four manual information systems to facilitate control of the loss of agency resources resulting from accidents, injuries, illnesses, and management deficiencies. These systems are fragmented, not comprehensive, and not easily accessible.

d. Pay and Position Management. There is considerable overlap in the various automated systems dealing with position management, classification, compensation, and staffing standards.

e. Training. The Training Subsystem of CPMIS serves regional and Headquarters management with information on the centralized training program. Local, semi-automated, and manual systems which store field conducted formal training, on-the-job training, and certification data have proliferated to serve local facility management. Neither CPMIS nor the local training systems are readily accessible to all management levels, and comprehensive data are difficult to extract and use since the various systems do not interface with each other.

f. Labor Relations. Because labor relations information is not available through an automated system, labor relations specialists do not have ready access to specific agency grievances, adverse actions, appeals, or negotiated grievances at each step. To obtain this information at the present time, each labor relations branch must be contacted.

801. LONG TERM GOALS

The goal of this plan is that by the year 2000, Human Resources Information within the agency will be handled by a group of interrelated systems sharing hardware, telecommunications, software, and common data elements.

a. Scope of Data Base. The CPMIS will continue operation to the year 2000 and serve as the foundation for the development of many Human Resources Information enhancements and projects. The data bases will include information necessary to effectively manage agency programs related to employment, civil rights and

equal opportunity, health and safety, pay and position management, training, and labor relations. The data bases will be linked to facilitate common access and reduction of duplicate input.

b. Functions to be Supported. The Human Resources Information systems outlined in this plan will support planning, prioritizing, implementing, and evaluating functions of almost all agency programs.

c. Access to System. Information will be entered once for the various systems at the source level, in consideration of proper management controls, the availability of cost-effective input devices, and sensitivity and privacy issues.

d. Interfaces. Most of the Human Resources systems will interface with each other. Information from the various Human Resources systems will be available to other information areas such as Materiel, Financial, Airports, and NAS Facilities.

802. INFORMATION SYSTEM EVOLUTION

a. Near Term (To 1985). Most Human Resources Information projects, changes, and modifications presently underway will be completed during this period. Some projects with short developmental cycles will be initiated and completed, and development will begin on some projects scheduled for completion during the intermediate term.

(1) In the CR/EEO area, a system will be developed and implemented to facilitate the tracking of discrimination complaints from their initial filing, through each stage of processing to final disposition. The system will be separate from other systems but will have access to other appropriate data bases.

(2) The key effort in the health and safety area will be directed toward full implementation of the Loss Management Information System (LMIS), which will replace the Safety Management Information System (SMIS). When the LMIS is fully and effectively operational, consideration will be given to integrating and/or consolidating it with the existing Workers' Compensation Information System (WCIS).

(3) Development will begin on a position allocation and control system in order to manage, allocate, and control positions and related costs. The system will allow comparisons, trend analyses, and projections of position needs and costs.

(4) Emphasis will be placed on efforts to enhance the present training information systems. Specific activities include validation of training information in CPMIS, adding new training elements and files to CPMIS, and initial planning and design of programs and procedures for extension of training related input to field offices and facilities. Special emphasis will be placed on improving the collection of information on college classes and other training programs paid for by employees themselves.

(5) A Labor Relations Subsystem, which will be part of the CPMIS, will be implemented in the near term. The subsystem will give current case by case information on all unfair labor practice complaints, negotiated grievances, agency grievances, and adverse actions. Specific activities include designing and developing the subsystem, training user personnel, and cataloging and entering case information into the data base.

b. Intermediate Term (To 1990).

(1) The availability of input devices at the field office/facility level will permit the entry of personnel data at its source. Fully automated processing of all personnel actions, including the elimination of the SF-52, Request for Personnel Action, as a physical document, will be achieved. Most approvals and reviews will be accomplished as internal routines of the system. Authorized users will have online query capabilities. There will also be direct data input to payroll processes.

(2) Training management will focus on full implementation of an expanded training data base and extension of this resource to the field office/facility level.

(3) All Human Resources Information projects will be completed during this period.

c. Long Term (To 2000). Enhancements and refinements of processes will take place during this period.

803. RETURN ON THE INVESTMENT

As a result of the planned Human Resources actions, the agency will attain a comprehensive Human Resources Information system where information will be accessible to all who need it, when they need it, and where they need it. The time required to process personnel actions and discrimination complaints and to record, maintain, and analyze data in all Human Resources areas will be greatly reduced. This will result in more effective and economical program administration.

Table 8.1 SUMMARY OF COSTS AND SAVINGS
(Dollars in Millions)

	1983	1985	1990	2000
Cumulative Savings	0.0	0.7	12.4	44.9
Cumulative Project Costs	0.2	0.9	5.3	5.3
Net	(0.2)	(0.2)	7.1	39.6
Discounted Cumulative Savings	0.0	0.6	7.5	17.8
Discounted Cumulative Project Costs	0.2	0.8	3.7	3.7
Discounted Net	(0.2)	(0.2)	3.8	14.1
Direct FTE Cumulative Savings	—	4	38	38

804. IMPACTS

a. **Organizational.** The availability of Human Resources Information at all levels of management will increase accountability, productivity, and efficiency.

b. **Program.** All programs will benefit from more timely, accurate, and accessible Human Resources Information. With personnel data being entered at its source in field offices, the nature of the personnel specialists' functions will change from case examination to more management assistance, audit, and review.

805. SUMMARY OF CHANGES

a. **Procedural.**

(1) Requests for personnel action will be entered into the automated system at the field facility, operating division, office, or service level, eliminating the need for hardcopy forms.

(2) Manual checks of budget and classification data files will be replaced by automated edits.

(3) An automated system will track stages of discrimination complaints.

(4) A Loss Management Information System will provide better utilization of data needed to control and reduce the agency's costs of accidents, injuries, and illnesses.

(5) Labor relations specialists will be better able to track and report on unfair labor practices, contract and agency grievances, adverse actions, and union bargaining unit activity.

(6) Field office/ facility (FOF) management will have direct access to training data.

b. **Automated Data Processing (ADP).** Stand-alone systems will be phased out in favor of a comprehensive, multifunctional, integrated information system. The inherent duplication of stand-alone processing of Human Resources Information will be minimized. The greatly expanded availability of information will enhance strategic planning, facilitate studies and evaluations in Human Resources analysis, and help eliminate redundant systems, hardware, and supporting technical services.

Section 2. PROJECTS SUMMARY

TABLE 8.2 PROJECT NAMES, SCHEDULES, RELATED AGENCY OBJECTIVES, AND OFFICE OF PRIMARY RESPONSIBILITY (OPR)

<i>Projects</i>	<i>Start</i>	<i>Completion</i>	<i>Related Agency Objectives</i>	<i>OPR</i>
CPMIS Enhancements:				
• Labor Relations Subsystem	1983	1984	1, 2	APT
• Discrimination Complaints Information	1984	1984	1, 2, 7, 8	APT
• Enlarge Training Data Base	1984	1985	1, 2	APT
• Automated Personnel Action Processing	1985	1988	1, 2, 4	APT
• Extension of Training Subsystem to Field Office/Facility Levels	1985	1988	1, 2, 4	APT
Loss Management Information System	1983	1986	1, 2, 8	APT
Position Allocation and Control System	1985	1988	1, 2, 8	APT

1. Maintain or Improve Current Levels of U.S. Aviation Safety
2. Prepare and Implement Programs in Support of the Agency's Human Relations Policy
3. Continue the FAA's Long Range Planning Program
4. Complete Implementation of the Management Organization and Establish the Systems and Procedures Needed to Assure Efficient Allocation of Human and Fiscal Resources
5. Aggressively Pursue Opportunities to Reduce, Eliminate, or Otherwise Improve the Agency's Regulatory Burden
6. Improve FAA's Preeminence as the World Aviation Authority
7. Continue and Expand the Agency Program for Employment and Advancement of Handicapped, Minorities, and Women Employees
8. Provide All Services of the FAA, Excluding the Airways Modernization Program, at a Cost Not Greater than the 1980 FAA Budget, Adjusted for Inflation

FIGURE 8.1 AGENCY OBJECTIVES FOR FY 1983

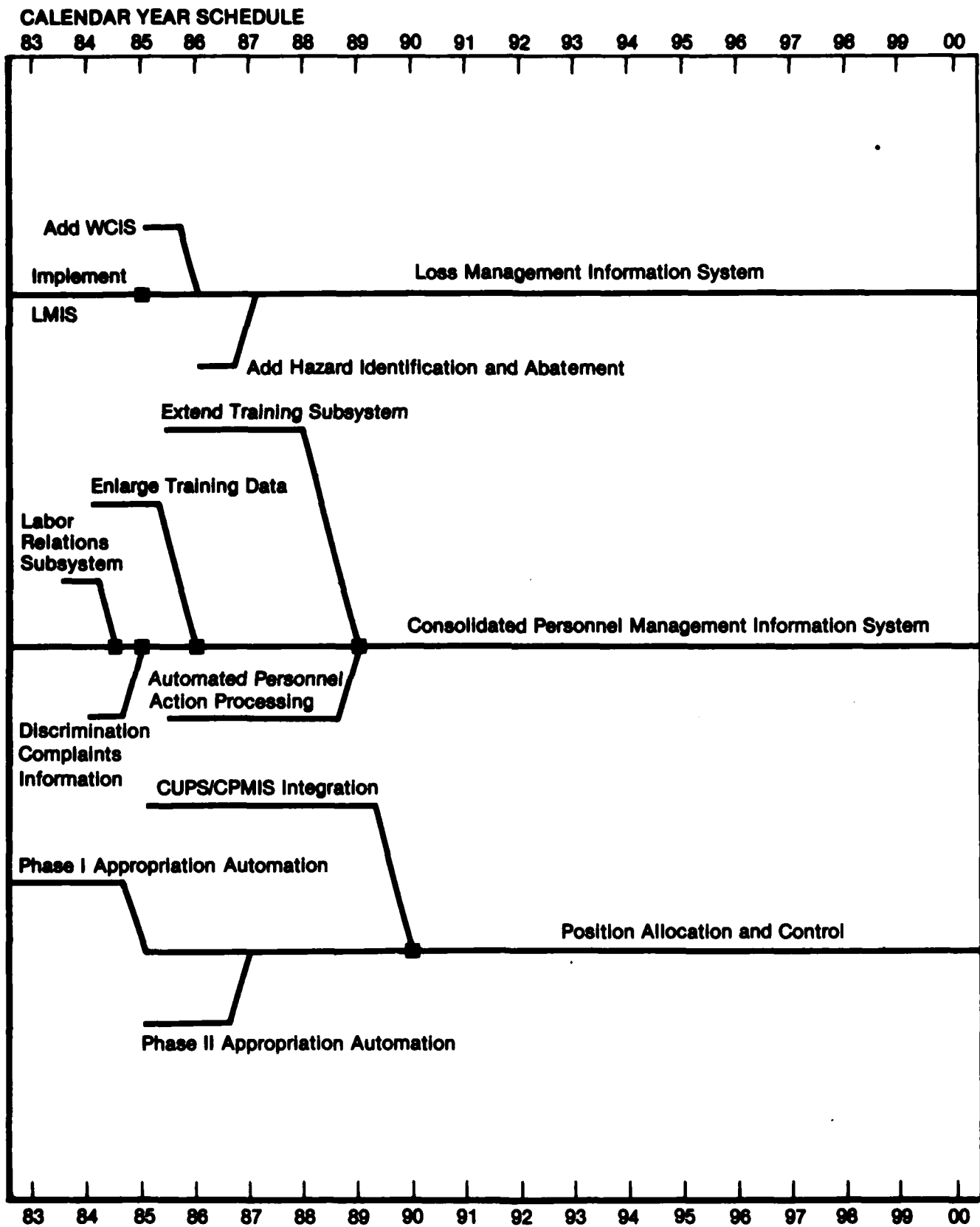


FIGURE 8.2 PROJECTS EVOLUTION

Section 3. SPECIFIC PROJECTS

806. PROJECT: Labor Relations Subsystem

a. Purpose: To provide ready access to information required to track and report adverse actions, contract and agency grievances, and unfair labor practices.

b. Approach: Capture data at the operating labor relations branch and/or national level, as appropriate, for input into CPMIS.

c. Equipment Requirements and Implications: The subsystem will require a general purpose terminal and line printer in each operating labor relations branch and in the Washington Headquarters Office of Labor Relations for overall program management.

d. Schedule:

(1) Complete requirements analysis March 1983

(2) Complete system design

June 1983

(3) Develop input programs

September 1983

(4) Complete user training

December 1983

(5) Begin implementation

January 1984

(6) Complete implementation

June 1984

e. Related Projects and Activities: Because of the sensitivity and confidentiality of specific case information, the security of the Labor Relations Subsystem must be assured in compliance with the Privacy Act.

f. Costs:

Dollars in Thousands

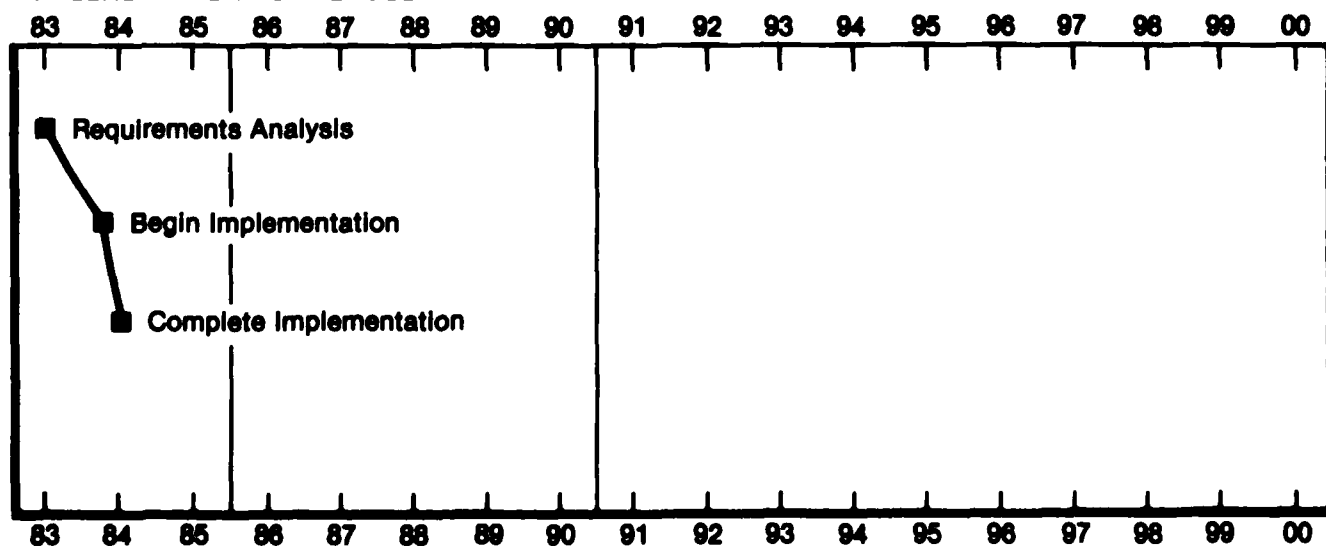
(1) Development costs (based on 1983 dollars)

\$266.9

(2) Annual savings after complete implementation

\$137.1

CALENDAR YEAR SCHEDULE



807. PROJECT: Discrimination Complaint Information System

a. Purpose: To establish an automated discrimination complaints tracking and information system that will track individual complaints and provide trends and statistics of cumulative complaints.

b. Approach: Operating and Headquarters civil rights staffs will collect and enter information on all complaints from initial contact through the administrative process to the final disposition of the case. The Headquarters Office of Civil Rights will be the custodian of this system. Regions and centers will be limited to information concerning complaints filed in their jurisdiction.

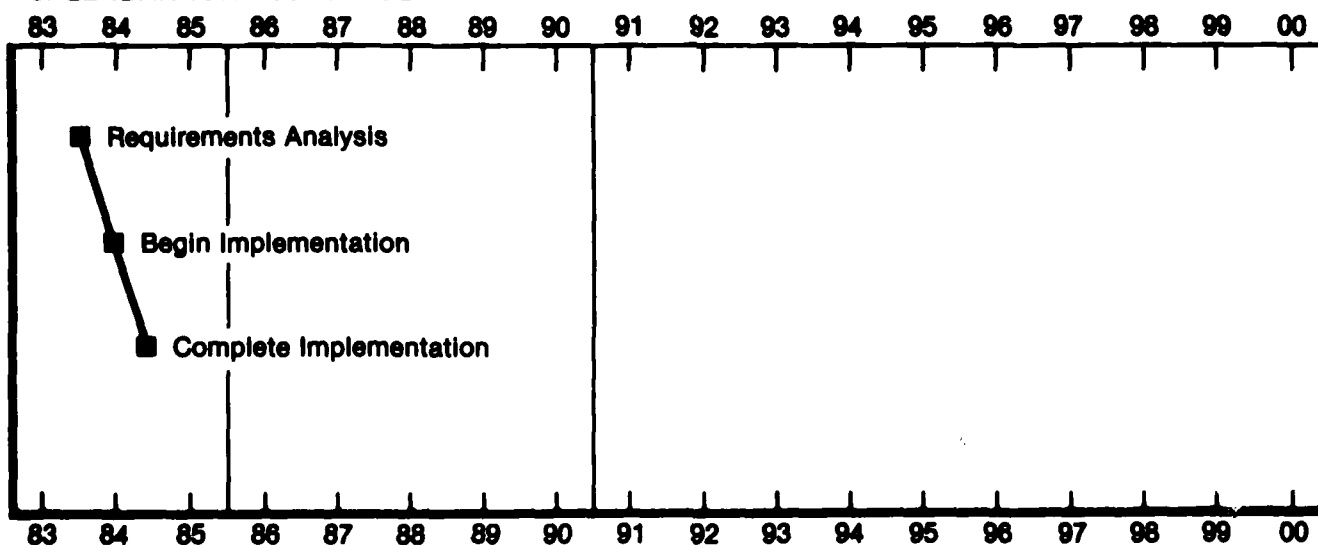
c. Equipment Requirements and Implications: Terminals will be required in the Headquarters Office of Civil Rights and the regional Civil Rights staff offices.

d. Schedule:

- | | |
|------------------------------------|----------------|
| (1) Complete requirements analysis | February 1984 |
| (2) Complete system design | April 1984 |
| (3) Develop input programs | July 1984 |
| (4) Begin implementation | September 1984 |
| (5) Complete implementation | December 1984 |

e. Related Projects and Activities: None.**f. Costs:***Dollars in Thousands*

- | | |
|--|---------|
| (1) Development costs (based on 1983 dollars) | \$80.4 |
| (2) Annual savings after complete implementation | \$180.6 |

CALENDAR YEAR SCHEDULE

808. PROJECT: Enlarge CPMIS Training Data Base

a. Purpose: A new file will be developed in the CPMIS training subsystem to store information on certifications and field-conducted on-the-job training (OJT) allowing identification of FAA personnel with specific type ratings and/or equipment certifications.

b. Approach: Office of Personnel and Training representatives will coordinate with the regions to establish policies, procedures, and methods of input and output.

c. Equipment Requirements and Implications: None

d. Schedule:

(1) Complete requirements analysis March 1984

(2) Complete system design June 1984

(3) Develop input programs December 1984

(4) Complete user training March 1985

(5) Complete data load June 1985

(6) Begin implementation June 1985

(7) Complete implementation December 1985

e. Related Projects and Activities: None.

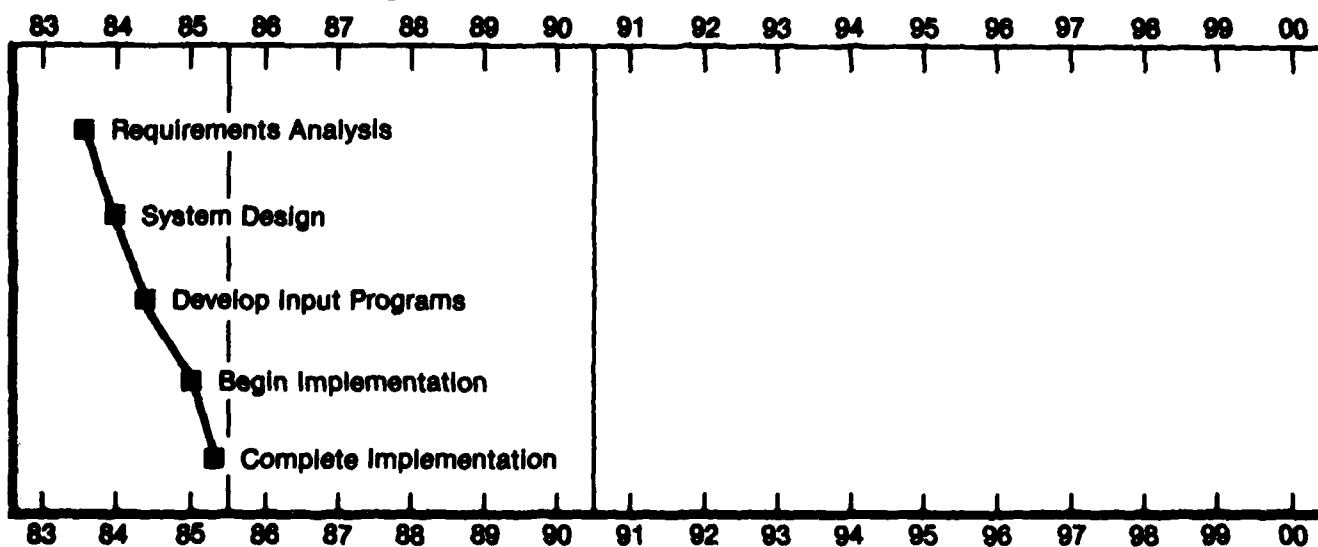
f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars) \$339.9

(2) Annual savings after complete implementation \$487.1

CALENDAR YEAR SCHEDULE



809. PROJECT: Automated Personnel Action Processing

a. Purpose: To replace time-consuming, labor-intensive, manual methods of requesting and processing personnel actions with a new, automated personnel system, complete from input at the lowest level to the issuance of a paycheck. The system will provide local field facility managers with immediate access to current personnel data on each of their employees.

b. Approach: This project will be completed in two phases:

(1) During Phase I, terminal acquisition and installation and system programming will be accomplished.

(2) In Phase II, access to the system and data input will be from all operating locations in the agency with data output and feedback to these same sites. Computer supported input requirements, controls, and edits as well as selective review and validation of the request will ensure proper budgetary and classification controls to safeguard the system against breaches of security and privacy. A request for personnel action input at the operating level will trigger a computer check of the budget authorization file and the position file to ensure that the position is both authorized and properly classified, prior to the action request arriving at the ter-

minal of the servicing personnel staffing specialist. As part of this system, all position descriptions, applications, and correspondence will be on microfiche and will be cross-referenced by computer.

c. Equipment Requirements and Implications: General purpose terminals and printers must be accessible to field offices, each Headquarters office and service, each regional office major division, and certain personnel office specialists on a two for one terminal basis.

d. Schedule:

(1) Complete requirements analysis	December 1985
(2) Complete system design	September 1986
(3) Develop input programs	December 1987
(4) Begin implementation	January 1988
(5) Complete implementation	December 1988

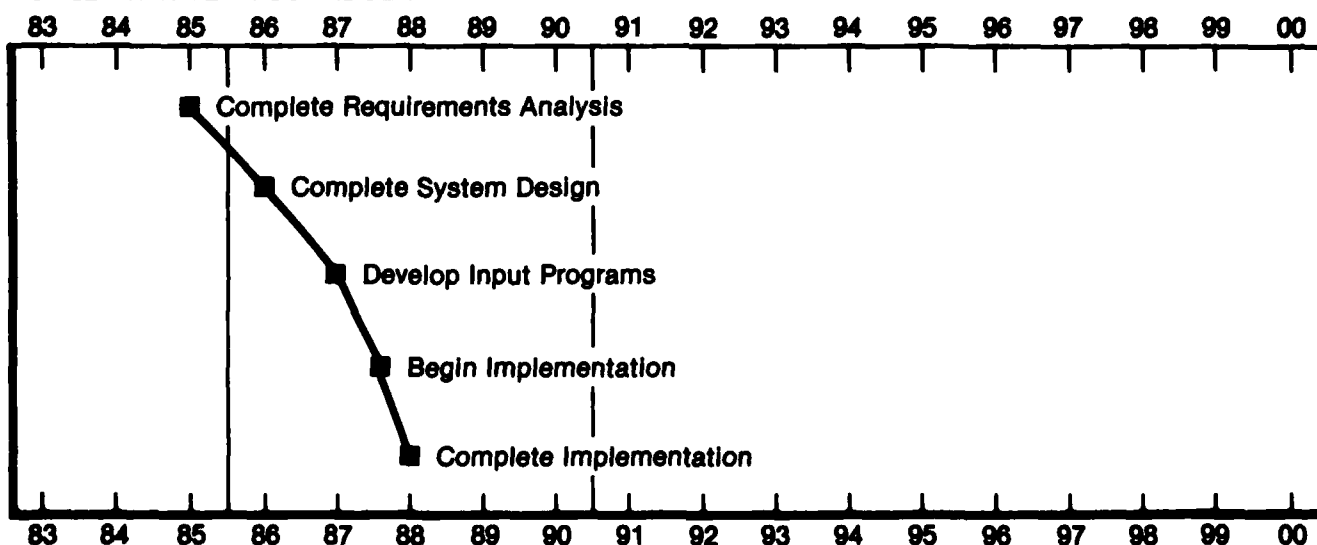
e. Related Projects and Activities: This project is dependent on receiving authority from the Office of Personnel Management to modify the Standard Form 52, Request for Personnel Action.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$649.3
(2) Annual savings after complete implementation	\$604.4

CALENDAR YEAR SCHEDULE



810. PROJECT: Extension of Training Subsystem to Field Office/Facility Level

a. Purpose: This project will define and implement procedures which will allow field office/ facility (FOF) management direct access to training data stored in CPMIS.

b. Approach: A comprehensive needs analysis will be conducted to determine all information requirements at the FOF level. Based on this analysis, user-friendly, predefined processes and related screens and reports will be devised; a facility user manual developed; and user orientation and training conducted.

c. Equipment Requirements and Implications: The project is based on the premise that multipurpose terminals will be phased in at FOF's during the 1985-1990 time frame and that some interface is possible with other data bases storing training information (i.e., AMIS, MMS, ASAS, etc.).

d. Schedule:

(1) Complete requirements analysis	December 1985
(2) Complete system design	September 1986
(3) Develop input programs	December 1987
(4) Begin implementation	January 1988
(5) Complete implementation	December 1988

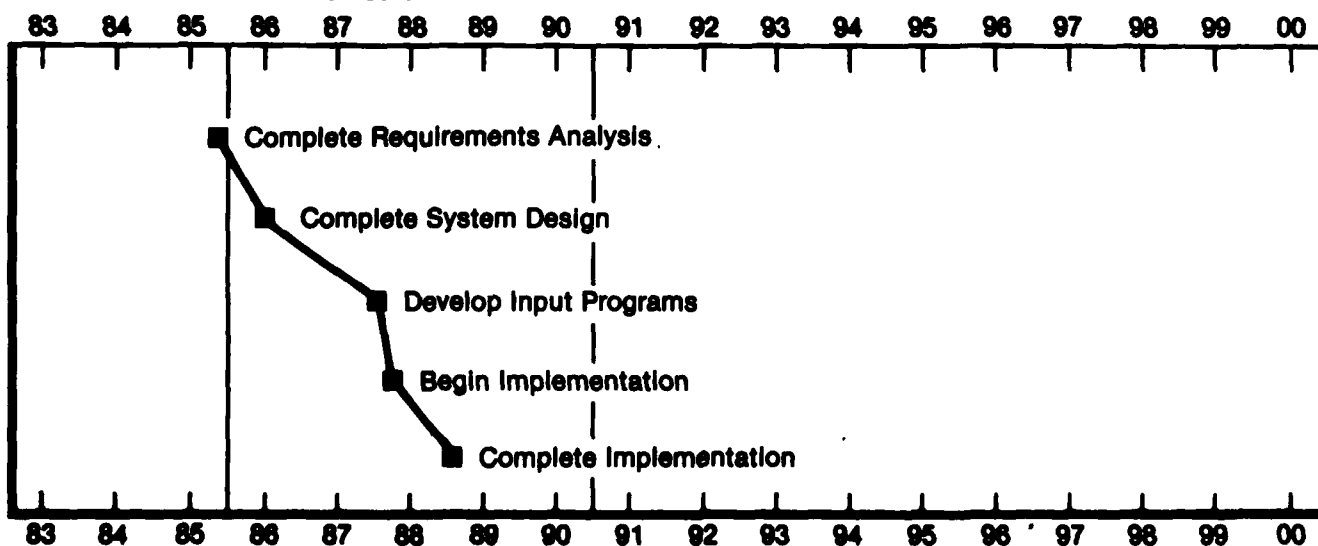
e. Related Projects and Activities: This project is similar to the Automated Personnel Action Processing Project and will require close coordination.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$1,247.8
(2) Annual savings after complete implementation	\$481.0

CALENDAR YEAR SCHEDULE



811. PROJECT: Loss Management Information System (LMIS)

a. Purpose: To integrate all loss management data and environmental risk factors relating to agency personnel, property, and operations; e.g., accident cost and causal data, hazard identification and abatement, etc.

b. Approach: LMIS will be a comprehensive occupational health and safety management system and will replace the existing, ineffective Safety Management Information System (SMIS). The Worker's Compensation Information System (WCIS), which contains information on employee claims resulting from accidents, injuries, and illnesses, will be consolidated into the LMIS. LMIS will also capture and incorporate hazard identification and abatement data from workplace inspections and from information obtained from employee complaints of unsafe or unhealthful conditions.

c. Equipment Requirements and Implications: General purpose terminals must be available in Headquarters, regions, centers, and Metropolitan Washington Airports.

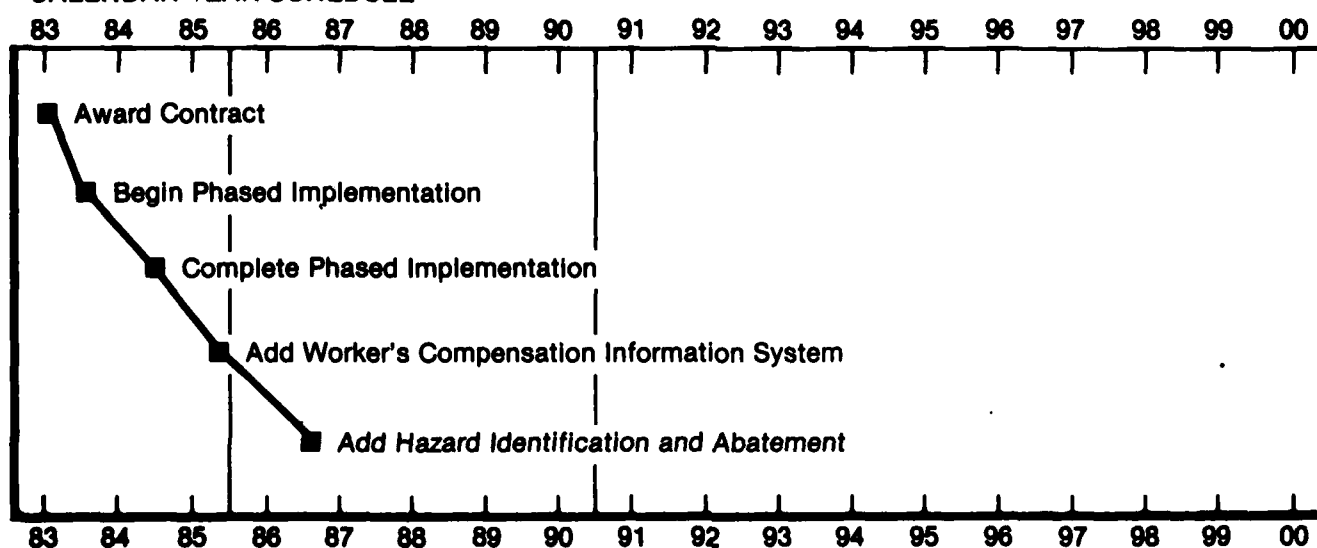
d. Schedule:

(1) Award contract to modify and test DOT system within FAA	June 1983
(2) Complete modification and testing	December 1983
(3) Begin phased implementation by region/center	January 1984
(4) Complete phased implementation	December 1984
(5) Add Worker's Compensation Information System	December 1985
(6) Add hazard identification and abatement data	December 1986

e. Related Projects and Activities: This project must interface with CPMIS and UPS.

f. Costs:*Dollars in Thousands*

(1) Development costs (based on 1983 dollars)	\$235.1
(2) Annual savings after complete implementation	\$506.9

CALENDAR YEAR SCHEDULE

812. PROJECT: Position Allocation and Control System

a. Purpose: To use the Consolidated Personnel Management Information System (CPMIS), Uniform Payroll System (UPS), Uniform Accounting System (UAS), and other data systems accessible in an integrated mode for the management, allocation, and control of positions and related costs.

b. Approach: A data subsystem will be developed that permits user access to agency data bases for ad hoc reporting and statistical projecting.

c. Equipment Requirements and Implications: This system will use the general purpose remote terminals and printers that will have been previously installed for entry and access to the aforementioned data bases, i.e., CPMIS, UPS, UAS, and ancillary subsystems.

d. Schedule:

- | | |
|------------------------------------|----------------|
| (1) Complete requirements analysis | September 1985 |
| (2) Complete system design | March 1986 |
| (4) Complete program testing | March 1987 |
| (5) Begin implementation | September 1987 |
| (6) Complete implementation | December 1988 |

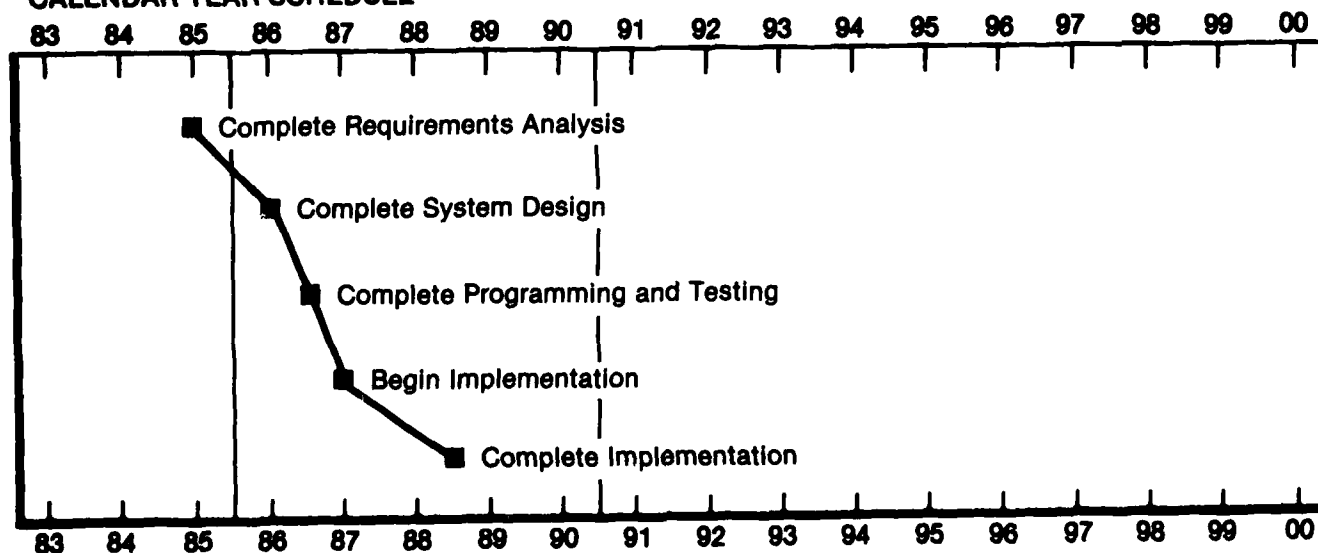
e. Related Projects and Activities: This project will be closely coordinated with the development of an automated budget system.

f. Costs:

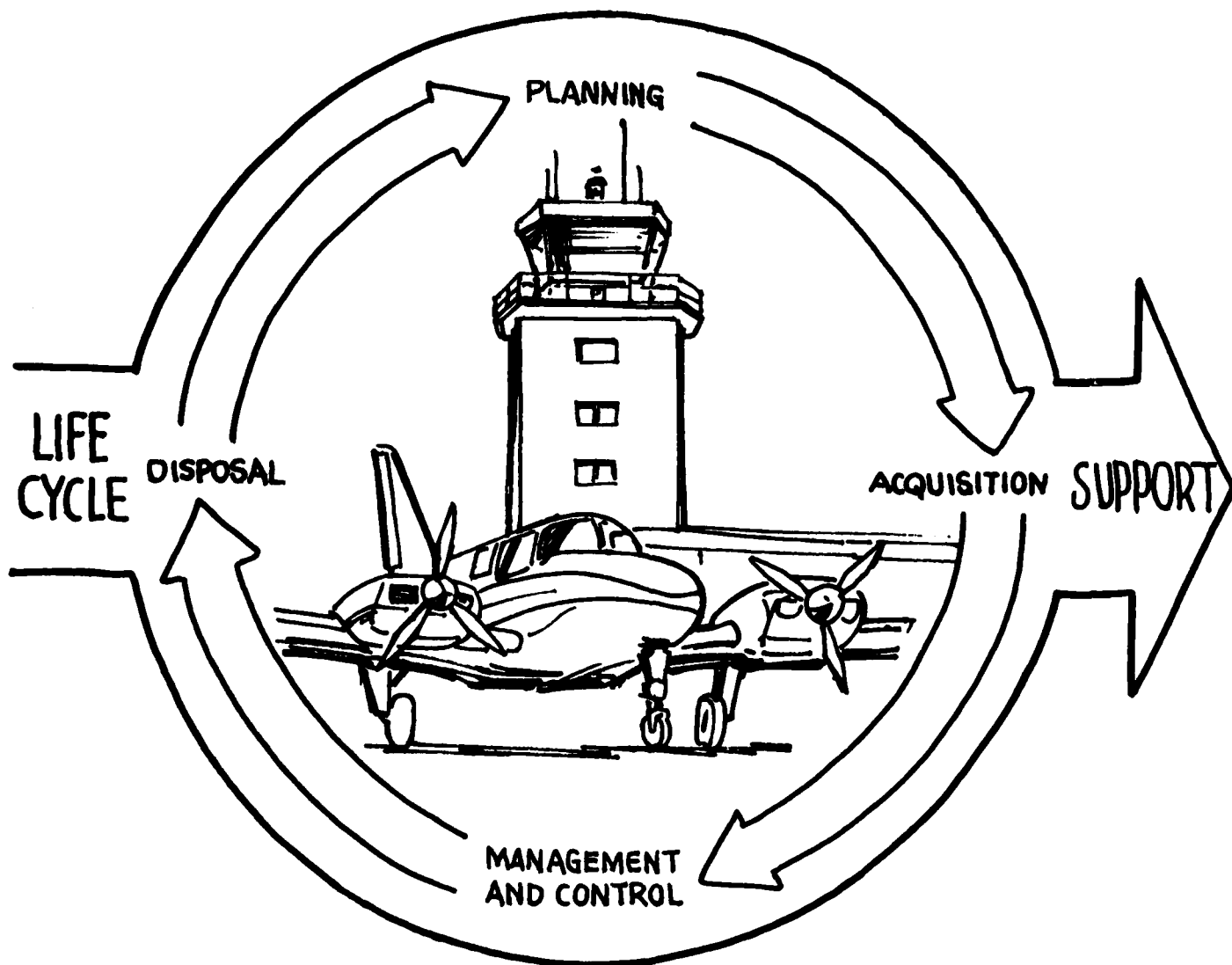
Dollars in Thousands

- | | |
|--|-----------|
| (1) Development costs (based on 1983 dollars) | \$2,463.9 |
| (2) Annual savings after complete implementation | \$853.6 |

CALENDAR YEAR SCHEDULE



2



Materiel Resources Information Requirements

Chapter 9. MATERIEL RESOURCES INFORMATION REQUIREMENTS

Section 1. GENERAL

900. PRESENT ENVIRONMENT, PROBLEMS, AND DEFICIENCIES

The primary purpose of the Materiel Resources area programs is to provide the time and place utility for the equipment, real estate and space, spare/repair parts, supplies, and supporting services needed to establish, operate, manage, maintain, and eventually dispose of NAS facilities and agency aircraft. Materiel Resources is an area that operates in an environment of extensive and often antiquated laws and regulations and high vulnerability to waste, mismanagement, fraud, and abuse. This program is responsible for the management and control of agency assets valued at nearly three billion dollars.

a. Currently, Materiel Resources functional management depends upon a conglomeration of standardized, partially standardized, and completely nonstandardized systems, both automated and manual. These systems evolved primarily from systems developed during a period when human resources were relatively abundant and cheap, and computer power was relatively scarce and expensive. From a functional perspective, the human resources requirements needed to operate the labor-intensive automated systems developed in the 1960's and our current manual systems are simply not in consonance with the human resources which are available now or which will be available in future years.

b. Most automated data processing (ADP) systems currently supporting the Materiel Resources area were not originally designed to measure effectiveness or efficiency in mission accomplishment or to measure levels of productivity. They were designed to keep records rather than to actively support the processes needed to perform the mission. In other words, these systems were designed for limited operational purposes with little consideration of any requirements for performance related data.

c. The systems and subsystems that support materiel management are not directly accessible to most users. Usually data must flow from the point of origin to one or a few centralized points in order to be entered into

the system. Many users must obtain information from data bases through time-consuming processes involving intermediaries. Interfaces between systems within Materiel Resources and between Materiel Resources and other related systems are usually manual.

d. More specifically, there are four major ADP systems which support the Materiel Resources related functions. These functional systems are the Personal Property In-Use Management System, the Depot Inventory System, the Project Materiel System, and the Real Property System. There is little or no real automated support at the national level for the procurement and property utilization screening and disposal functions. The Materiel Resources area systems and functions are described as follows:

(1) The Personal Property In-Use Management System is the most recently developed and the most fully automated system in the Materiel Resources area. However, enhancements to the system can be made which will improve in guarding against fraud, waste, abuse, and mismanagement and will provide more productivity and performance measurement data. In addition, improvements could be made to reduce the need for manual intervention and to reduce other operational costs.

(2) The Depot Inventory System is the largest system in this group and, therefore, provides the greatest potential benefit through better application of ADP technology. The current ADP design dates back 20 years; consequently, a great deal of manual effort is required to make the system work. Data transmission from the field and within subsystems of the system itself is primarily manual. ADP techniques relating to source data entry, automated processing of all but exceptional transactions, and user access to the system offer the potential for major reductions in personnel costs and response times. Access to better data on which to determine materiel requirements, faster response, and other such improvements can offer large savings in inventory.

(3) The Project Materiel System supports a large capital investment program. Flexible reaction to

changing priorities in construction and equipment installation programs is very difficult because of the lack of relatively current data in this system. Also, loading, updating, and retrieving required data from the system is extremely time-consuming. Lack of widespread access to current and complete data reduces management ability to optimize the distribution of materiel and related personnel resources.

(4) The Real Property System provides a data base suitable only for generating predefined, recurring reports. It lacks the flexibility to serve as a management tool aimed at minimizing real property and utility costs and at eliminating opportunities for real estate related waste or abuse. Large volumes of paper accompany the labor-intensive processes supporting this function.

(5) The Procurement Function is not supported by an agency ADP system; however, several regions/centers have developed some local ADP support for the function. While each of these local systems provides some help, none of them provides a full range of supporting services at any one or all locations. Paper and labor-intensive processes characterize the procurement process wherever it is performed in the FAA.

(6) The Personal Property Utilization Screening and Disposal Function is a paper and labor-intensive system due, in large part, to regulations imposed on the FAA. Nevertheless, there are many manually prepared documents and reports, duplicative data entry processes, and other similar inefficiencies that can be eliminated or reduced. In addition, positive management control and performance and productivity data are weak or absent. Very little ADP is used in support of this function.

901. LONG TERM GOALS

The broad, long term goals for this information area are to:

- maximize support for the agency's National Airspace System (NAS) and aircraft programs by effective and timely acquisition and control of the required materiel to support the initial installation and subsequent maintenance and operation of these facilities and agency aircraft;
- minimize agency inventories of operating and project materiel, personal and real property through timely and prudent acquisition, distribution, management, and disposition of such materiel and property;
- improve controls and other procedures in order to minimize the agency's vulnerability to waste, mismanagement, fraud, and abuse and to ensure compliance with applicable laws and regulations; and
- reduce manual workload and increase work force productivity through more effective application of information technology to all aspects of the program, both centrally and in the field.

a. **Scope of Data Base.** The data bases will encompass the operational and management information needs at field, regional, center, and Headquarters levels.

b. **Functions to be Supported.** The following functions will be supported: cataloging, provisioning, storage and warehousing management, transportation, production and quality control, inventory management and accountability, requisitioning and supply support, procurement, minority business program, management and control of government furnished property, motor vehicle management, management of in-use personal property, utilization screening and disposal, management of project materiel, and real estate and space management.

c. **Access to System.** With the exception of limitations required by law or external regulation, very few limitations on "read only" access to Materiel Resources systems are anticipated. More specifically:

(1) Direct data entry access will be established in the intermediate period to permit all source data entries from facilities and other source locations. In addition, accounting and logistics organizations will be able to enter data into the property systems and subsystems, and organizations responsible for facility establishment programs will be able to enter data into project materiel files.

(2) Direct data output access will be available for all of those responsible for data entry functions. Also, all organizations with a management interest in Materiel Resources programs will be able to directly obtain status, productivity, and performance data.

d. **Interfaces.** The principal interfaces of the Materiel Resources systems will be with the following:

(1) the Program Management System (PMS) to obtain current data on project status for use in the project materiel subsystem and the agencywide Procurement System;

(2) the Maintenance Management System (MMS) to obtain facility profile data and facility failure data so that the inventory management functions of the Logistics and Inventory System (LIS) can be more precisely performed; and

(3) the Uniform Accounting System (UAS) to obtain or provide financial data relevant to all of the Materiel Resources systems.

902. INFORMATION SYSTEM EVOLUTION

a. **Near Term (To 1985).** Emphasis during this period will be placed on the development of important elements of the LIS and on upgrading those systems which are most directly related to facility establishment program management—the project materiel and procurement systems. Emphasis on LIS will be on obtaining accurate facility component information and on providing better and more direct access to the requisitioning components of the system. Similarly, the

project materiel and procurement systems will emphasize direct access for user input and status information retrieval and the elimination of hard copy documents or reports.

b. Intermediate Term (To 1990). During this period, the major elements of the Materiel Resources Information system development and upgrades will be completed. In addition to the focus on completing efforts in the LIS and property systems, special attention will be placed on developing effective, automated interfaces with those systems that supply and receive data from Materiel Resources Information systems and on providing field level data entry and access.

c. Long Term (To 2000). This will be a period of refinement and improvement in all of the systems to maximize the benefits of modern automation, especially in reducing the need for paper-driven systems and manually generated reports/documents.

903. RETURN ON THE INVESTMENT

The return on investment associated with Materiel Resources projects is directly related to the ability of these projects to increase the productivity of the work force enough so that the management information generated by these systems can be used to improve the effectiveness and efficiency of Materiel Resources programs.

Table 9.1 SUMMARY OF COSTS AND SAVINGS
(Dollars in Millions)

	1983	1985	1990	2000
Cumulative Savings	0.0	9.9	94.4	298.9
Cumulative Project Costs	2.3	9.6	15.2	15.2
Net	(2.3)	0.3	79.2	283.7
Discounted Cumulative Savings	0.0	8.3	60.3	124.9
Discounted Cumulative Project Costs	2.3	8.7	12.5	12.6
Discounted Net	(2.3)	(0.4)	47.8	112.3
Direct FTE Cumulative Savings	—	10	20	20

904. IMPACTS

a. Organizational. Minimal organizational impacts and functional transfers between organizations are anticipated to result from the implementation of these projects.

b. Program. The primary impact in the Materiel Resources programs will be increased productivity and efficiency resulting from improved management information. As a result of the planned projects, the Materiel Resources area will be characterized by systems that reduce manual intervention, duplicative data entry, time delays, and paper documents and reports. In addition, there will be better audit trails and better performance and productivity related management information available to all levels in the agency.

905. SUMMARY OF CHANGES

a. Procedural. With the development of each project, new procedures will be established which will allow all operating and management personnel to change from manual to automated processes with fewer paper documents or reports.

b. Automated Data Processing (ADP). As functions are automated, the data entry processes will be extended to the source level. The Materiel Resources work force at all organizational levels will become more involved with the use and management of ADP systems and equipment.

Section 2. PROJECTS SUMMARY

TABLE 9.2 PROJECT NAMES, SCHEDULES, RELATED AGENCY OBJECTIVES, AND OFFICE OF PRIMARY RESPONSIBILITY (OPR)

<i>Projects</i>	<i>Start</i>	<i>Completion</i>	<i>Related Agency Objectives</i>	<i>OPR</i>
Logistics and Inventory System	In Process	1987	1, 4, 8	AAC
Personal Property In-Use Management System	1983	1991	1, 4, 8	ALG
Automated Utilization and Disposal System	1984	1985	1, 4, 8	ALG
Project Materiel System	1984	1985	1, 4, 8	ALG
Procurement System	1984	1985	1, 4, 8	ALG
Real Property Management System	1987	1988	1, 4, 8	ALG
Extend Acquisition, Materiel, and Property Management Systems to Field Level	1987	1987	1, 4, 8	ALG
Aircraft Management Information System (AMIS)-Hanger Property Management	1983	1984	1, 4, 8	AVN

1. Maintain or Improve Current Levels of U.S. Aviation Safety
2. Prepare and Implement Programs in Support of the Agency's Human Relations Policy
3. Continue the FAA's Long Range Planning Program
4. Complete Implementation of the Management Organization and Establish the Systems and Procedures Needed to Assure Efficient Allocation of Human and Fiscal Resources
5. Aggressively Pursue Opportunities to Reduce, Eliminate, or Otherwise Improve the Agency's Regulatory Burden
6. Improve FAA's Preeminence as the World Aviation Authority
7. Continue and Expand the Agency Program for Employment and Advancement of Handicapped, Minorities, and Women Employees
8. Provide All Services of the FAA, Excluding the Airways Modernization Program, at a Cost Not Greater than the 1980 FAA Budget, Adjusted for Inflation

FIGURE 9.1 AGENCY OBJECTIVES FOR FY 1983

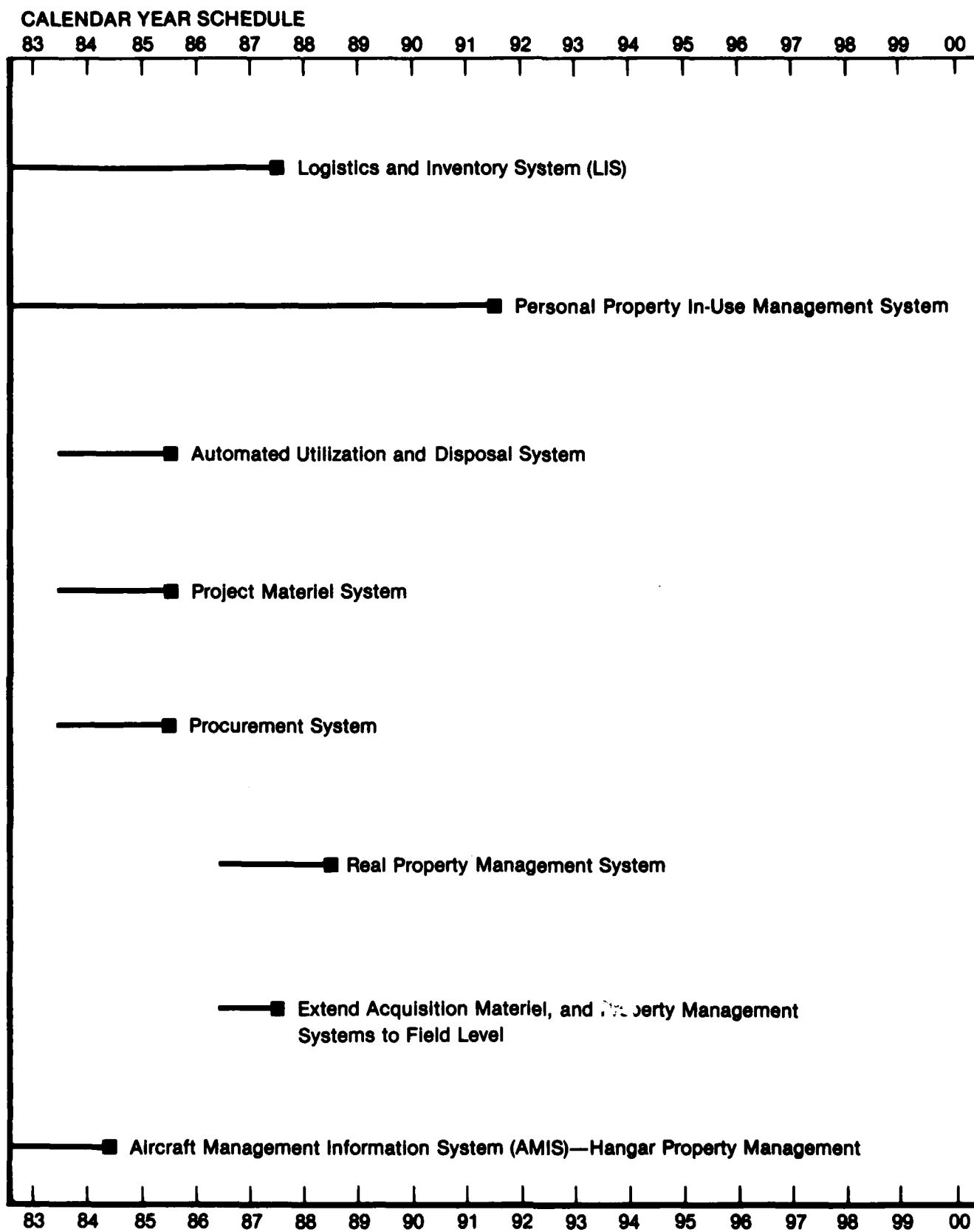


FIGURE 9.2 PROJECTS EVOLUTION

Section 3. SPECIFIC PROJECTS

906. PROJECT: Logistics and Inventory System (LIS)

a. Purpose: To design, develop, and implement a centralized inventory management system at the FAA Depot that efficiently and effectively meets logistics and inventory needs through the 1990's.

b. Approach: The logic and order of this project are as follows:

(1) Phase I

(a) An equipment population data base will be developed.

(b) All programs within provisioning will be automated, and all historical data will be maintained.

(2) Phase II

(a) An inventory system will be developed.

(b) An online requisitioning system with field and local facilities will be developed.

(c) Communication links with other systems will be provided.

(3) Phase III

(a) The Requirements Process will be fully automated to utilize available information in related data bases.

(b) The Redistribution and Marketing System will be fully automated to record all transactions for fiscal and financial control.

(c) The Physical Inventory Process will be accomplished by an interface of the Warehouse Automation System.

(d) The Supply Management Process will provide supply effectiveness for each inventory manager, organizational element, stock class, category, and commodity type.

(e) Quality control will be automated to provide automated collection, maintenance and dissemination of quality problems, technical user complaints, and cost avoidance data.

(f) Traffic Management will be automated to capture and store statistical data related to line item shipments, line item shipping costs and weight, and damage claims.

(g) Procurement interfaces will be expanded to allow Depot acquisition and repair requirements to be electronically passed to a procurement system.

(h) UAS interface will provide for accounting data presently received in hard copy form from the National Supply system to be passed electronically.

(4) Phase IV

(a) Online processing will be available for cataloging data to the Defense Integrated Data Systems. The manual, part number cross-reference cataloging file will be automated.

(b) The process to recompute budget requirements will be redesigned to allow a high degree of flexibility and also to allow inventory managers to recompute budget requirements for individual National Stock Numbers. Budget printing requirements will be automated.

(c) Storage management will be interfaced with the warehouse automation system.

(d) Depot exchange and repairs systems will be redesigned, and an interactive online system for scheduling Depot and F&E job/work orders will be implemented.

(e) A system will be designed which will provide for positive identification and tracking of project materiel assets diverted to meet other needs than originally intended.

c. Equipment Requirements and Implications: Terminals will be required in Airway Facilities field offices, Flight Standards field offices, regional offices, regional centers, and Headquarters.

d. Schedule:

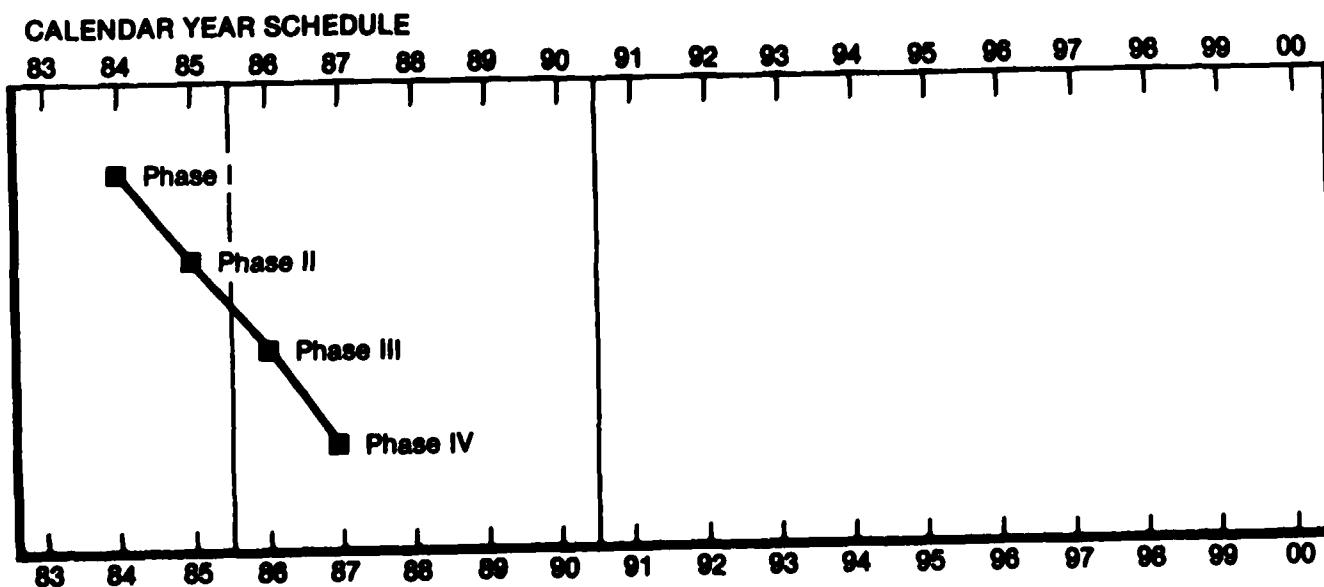
(1) Phase I: Implement an equipment population data base	1984
(2) Phase II: Implement online requisitioning system with field	1985
(3) Phase III: Implement Redistribution and Marketing System	1986
(4) Phase IV: Complete implementation	1987

e. Related Projects and Activities: External projects to Materiel Resources area and internal integration with PPIMS-II, AUSDS, and PMS-II.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$8,364.8
(2) Annual savings after complete implementation	\$16,473.5



907. PROJECT: Personal Property In-Use Management System

a. Purpose: To improve the management, control, and accountability of the agency's in-use personal property by better asset tracking and simpler user-friendly data entry processes; to improve line item visibility and control over expensive and critical agency equipment; to increase integrity of the agency's inventory data; and to reduce field level labor-intensive physical inventory processes.

b. Approach:

(1) **Phase I:** The current Personal Property System will be converted from older equipment to new in-house administrative computers based upon availability at each receiving location. This phase will include enhancements for operational user's effectiveness and efficiency. Initially, field input will be manual.

(2) **Phase II:** Extend the current record length to include usage, maintenance cost, and historical performance data.

(3) **Phase III:** Provide the capability to automatically track in-use property that is transferred between regions and centers and to report or access agencywide property data from Headquarters.

(4) **Phase IV:** Identify or retain information on selective, expensive, and critical items to be maintained

in the agency's inventory of personal property. Convert current "human readable" property labels to bar coded machine readable labels on all applicable property. Implementation will be on a custodian-by-custodian basis.

c. Equipment Requirements and Implications: A terminal is required by each accounting office and the property manager, and bar code readers need to be available to all custodians.

d. Schedule:

(1) Phase I: PPIMS-II conversion	1983
(2) Phase II: External PPIMS-II	1985
(3) Phase III: Integrate PPIMS-II data base	1987
(4) Phase IV: Initiate use of bar codes agencywide	1991

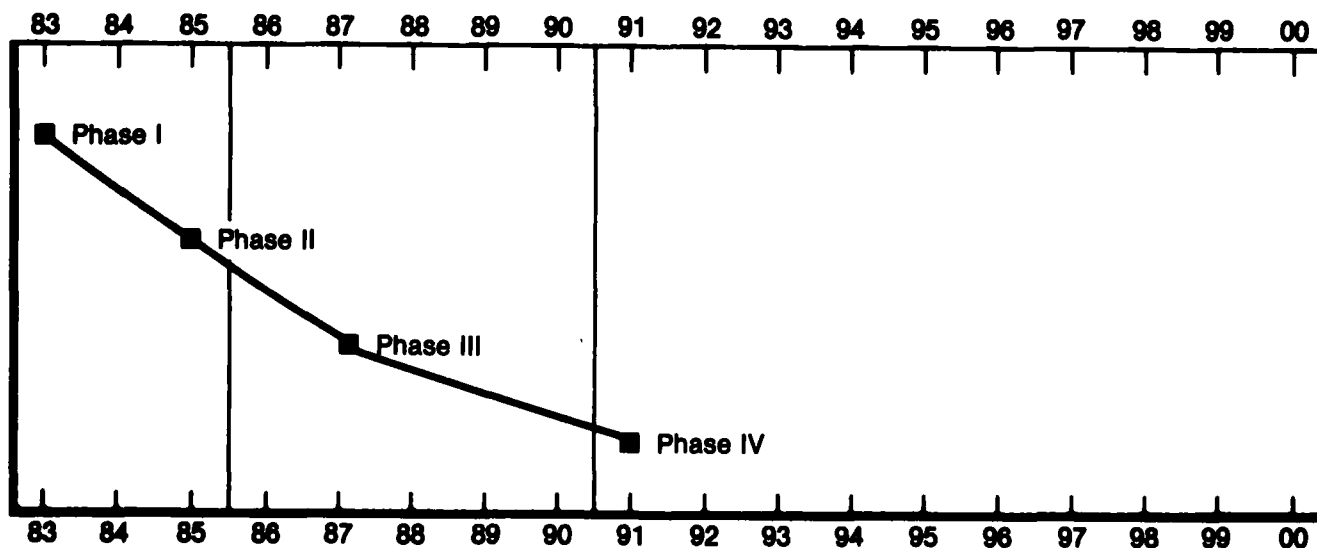
e. Related Projects and Activities: This project is partially dependent on extending Acquisition, Materiel, and Property Management Systems to the field level.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$1,757.3
(2) Annual savings after complete implementation	\$537.6

CALENDAR YEAR SCHEDULE



908. PROJECT: Automated Utilization Screening and Disposal System

a. Purpose: To replace the current labor-intensive manual process for disposal with an automated utilization screening and disposal system. This system will report, track, control, and account for personal property that is excess to FAA until disposal has been made.

b. Approach: Data entry will be automated at the region/center/Headquarters property manager level. Centralization of reporting, tracking, and access is envisioned to eliminate duplicative information transfers between all regions and centers and to provide a single automated interface with GSA.

c. Equipment Requirements and Implications: A terminal is required at each region/center property manager's location.

d. Schedule:

- | | |
|--------------------------------|------|
| (1) Define system requirements | 1984 |
| (2) Complete implementation | 1985 |

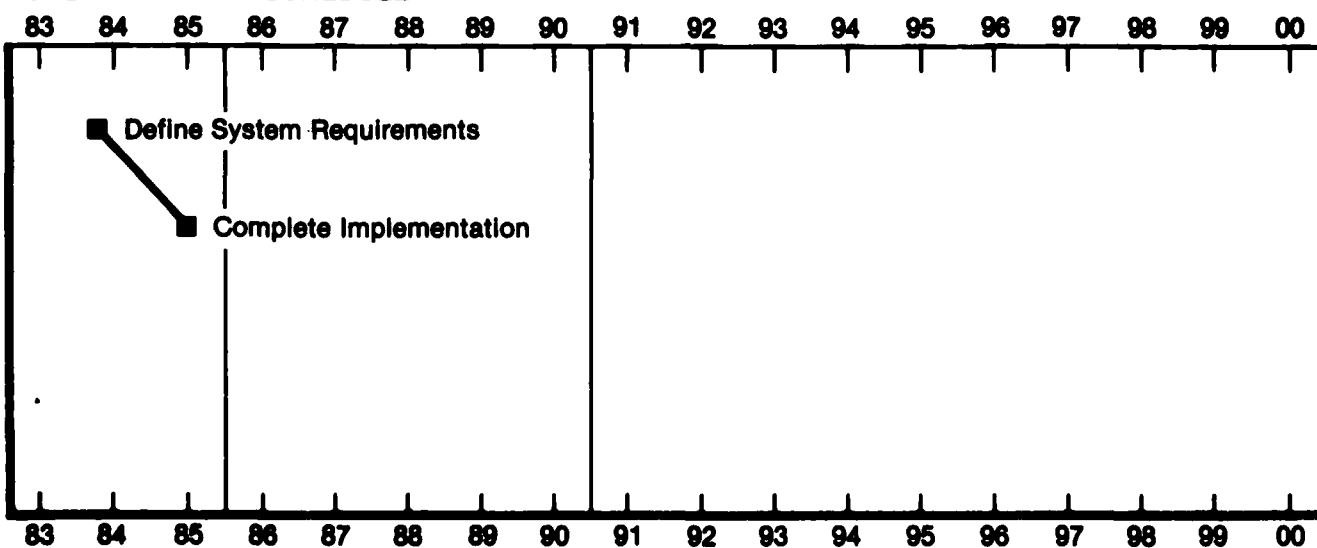
e. Related Projects and Activities: This project will be integrated into LIS and interfaced with PPIMS-II.

f. Costs:

Dollars in Thousands

- | | |
|--|---------|
| (1) Development costs (based on 1983 dollars) | \$911.7 |
| (2) Annual savings after complete implementation | \$763.0 |

CALENDAR YEAR SCHEDULE



909. PROJECT: Project Materiel System

a. **Purpose:** To develop a replacement for the current Project Materiel System which will reduce labor-intensive input and systems maintenance that is required of users and improve the timeliness and integrity of the system's data.

b. **Approach:** Provide online updating and status retrieval for project materiel information users.

c. **Equipment Requirements and Implications:** Access to terminals for regional, center, and Headquarters program management personnel, project materiel management personnel, and Depot personnel.

d. Schedule:

- | | |
|--------------------------------|------|
| (1) Define system requirements | 1984 |
| (2) Complete implementation | 1985 |

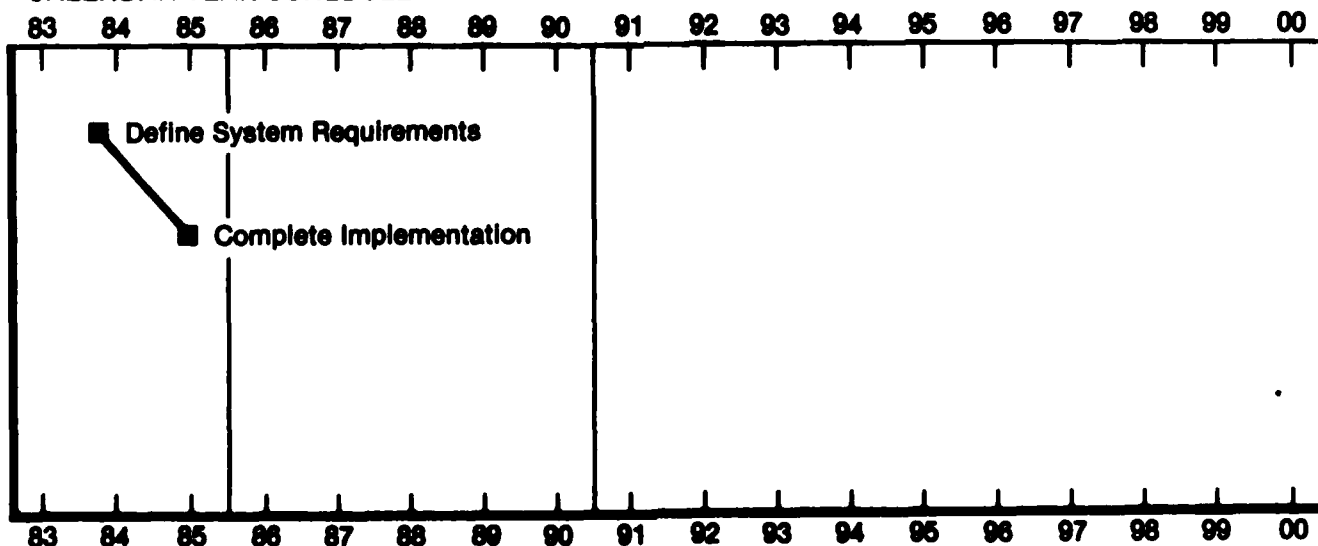
e. **Related Projects and Activities:** This system will be integrated with LIS and will be interfaced with accounting, procurement, in-use personal property, excess and disposal areas, and external systems.

f. Costs:

Dollars in Thousands

- | | |
|--|---------|
| (1) Development costs (based on 1983 dollars) | \$714.2 |
| (2) Annual savings after complete implementation | \$911.0 |

CALENDAR YEAR SCHEDULE



910. PROJECT: Procurement System

a. Purpose: To design, develop, and implement an agencywide procurement management system for preparing, tracking and providing the status of procurement requests and for monitoring, managing, and administering contracts after award.

b. Approach:

(1) Phase I: After full development, initially implement the system at Washington Headquarters.

(2) Phase II: Extend coverage of the system to regions and centers. This phase will also allow all agency procurement offices to have access to a central data base for selective actions.

c. Equipment Requirements and Implications: Access to terminals is needed for contracting specialists and requirements initiators.

d. Schedule:

- | | |
|--------------------------------|------|
| (1) Define system requirements | 1984 |
| (2) Complete implementation | 1985 |

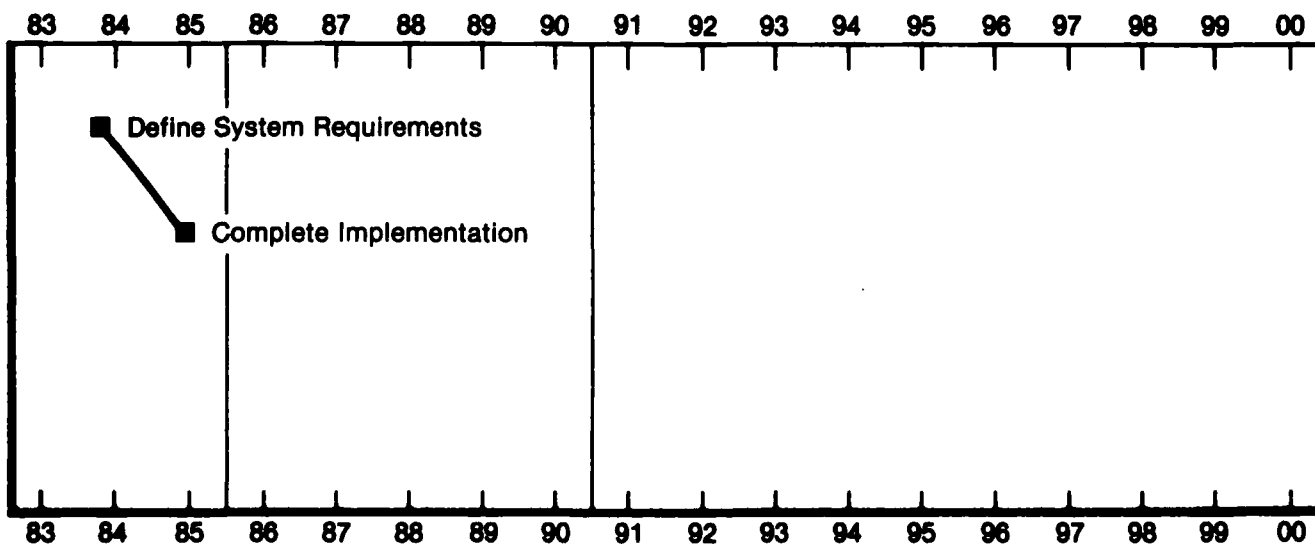
e. Related Projects and Activities: This system must interface with Financial Resources, Project Materiel, and Real Property Systems.

f. Costs:

Dollars in Thousands

- | | |
|--|-----------|
| (1) Development costs (based on 1983 dollars) | \$1,160.5 |
| (2) Annual savings after complete implementation | \$1,295.0 |

CALENDAR YEAR SCHEDULE



911. PROJECT: Real Property Management System

a. Purpose: To develop a Real Property Management System which provides automated capability for establishing, tracking, and providing status of acquisitions, procurement requests, management of leases and real property inventory, and disposal information.

b. Approach: Initially establish real property management information in an automated system on a regional/center basis. Provide extended capability for centralized access and reporting of required real property management data in lieu of current timesharing systems.

c. Equipment Requirements and Implications: Access to terminals for regional and Headquarters program

management personnel and regional and Headquarters project materiel management personnel.

d. Schedule:

- | | |
|--------------------------------|------|
| (1) Define system requirements | 1987 |
| (2) Complete implementation | 1988 |

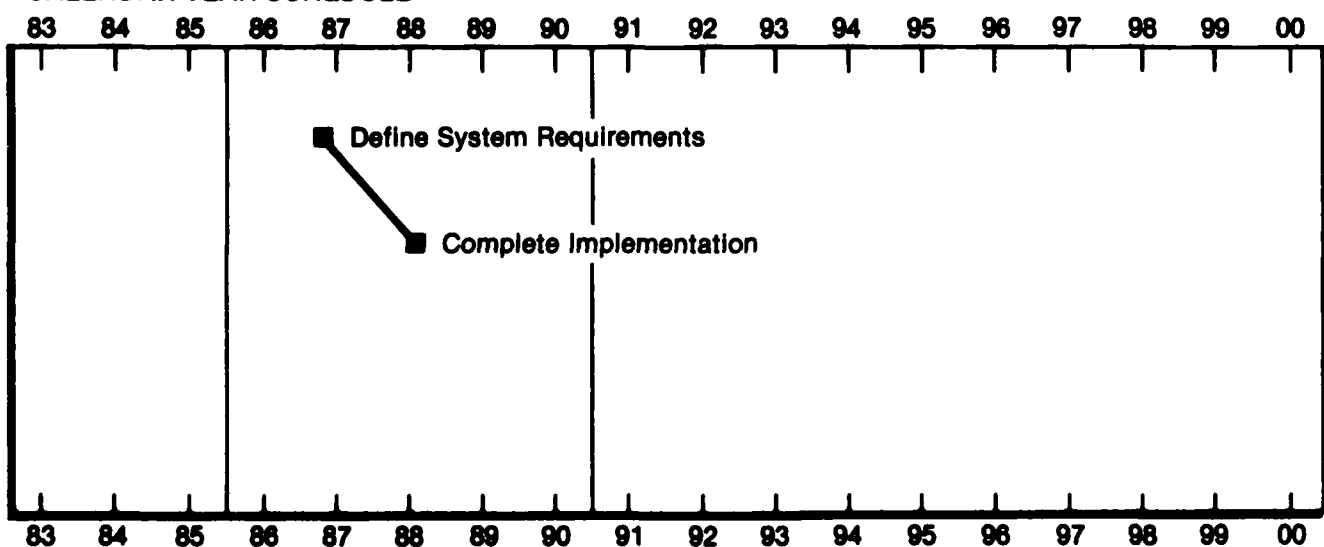
e. Related Projects and Activities: This project must be interfaced with accounting, procurement, in-use personal property, and excess and disposal areas.

f. Costs:

Dollars in Thousands

- | | |
|--|-----------|
| (1) Development costs (based on 1983 dollars) | \$1,464.6 |
| (2) Annual savings after complete implementation | \$368.0 |

CALENDAR YEAR SCHEDULE



912. PROJECT: Extend Acquisition, Materiel, and Property Management Systems to Field Level

a. Purpose: To provide the capability for field level direct data entry and retrieval of information, allowing the elimination of duplicative data entry processes, delays in information transmission, and the need for paper-driven systems and procedures between the field level and Depot/regional offices.

b. Approach: This capability is to be phased-in based on the availability of terminals at the field levels. It is not envisioned that field level terminals will be justified solely for acquisition, materiel, and property management purposes, but if available, they will be used for these purposes, due to justifications outside the Materiel Resources area. Each system will be extended based on a phased schedule which considers equipment availability and system development progress.

c. Equipment Requirements and Implications: Access to terminals by field personnel will be necessary.

d. Schedule:

- | | |
|--------------------------------|------|
| (1) Define system requirements | 1987 |
| (2) Complete implementation | 1987 |

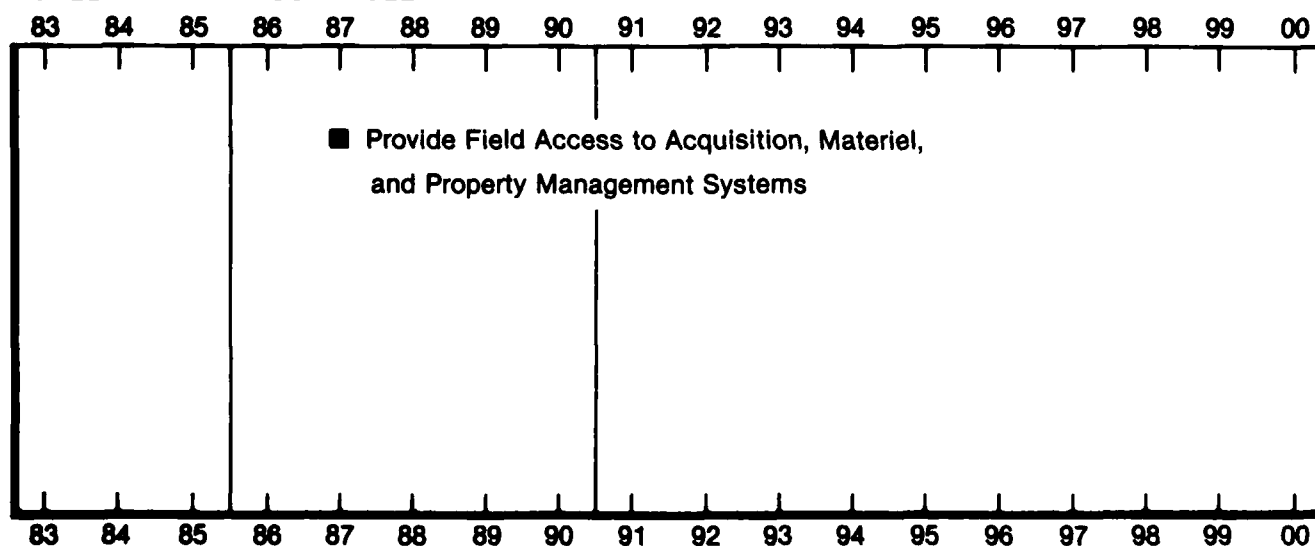
e. Related Projects and Activities: This project is fully dependent on projects external to the Materiel Resources area and is partially dependent on other developmental work.

f. Costs:

Dollars in Thousands

- | | |
|--|---------|
| (1) Development costs (based on 1983 dollars) | \$757.0 |
| (2) Annual savings after complete implementation | \$218.0 |

CALENDAR YEAR SCHEDULE



913. PROJECT: Aircraft Management Information System (AMIS)-Hangar Property Management

a. Purpose: To expand the present Hangar Inventory subsystem to include the hangar, line, and shop equipment at the aircraft maintenance bases. Including hangar test equipment in the inventory records will reduce the labor required for property accountability and maintenance scheduling in the maintenance bases.

b. Approach: Add revised file structures to the existing Hangar Inventory subsystem and load the data.

c. Equipment Requirements and Implications: None

d. Schedule:

- | | |
|--------------------------------|------|
| (1) Files design | 1983 |
| (2) Install and load the files | 1984 |

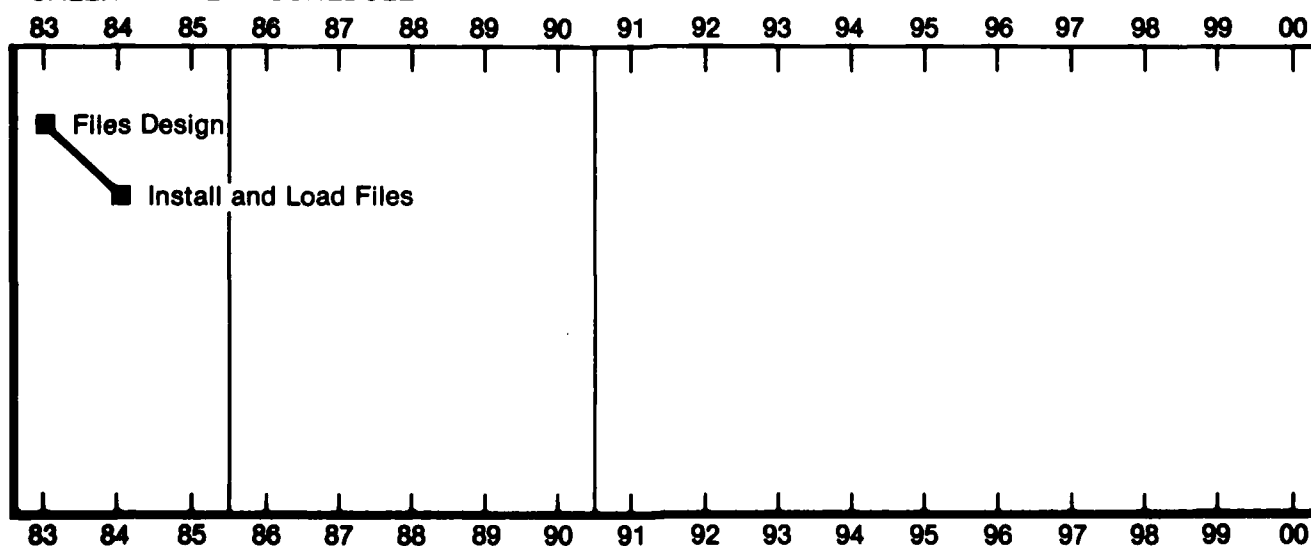
e. Related Projects and Activities: LIS, which will ultimately include the complete Hangar Inventory program

f. Costs:

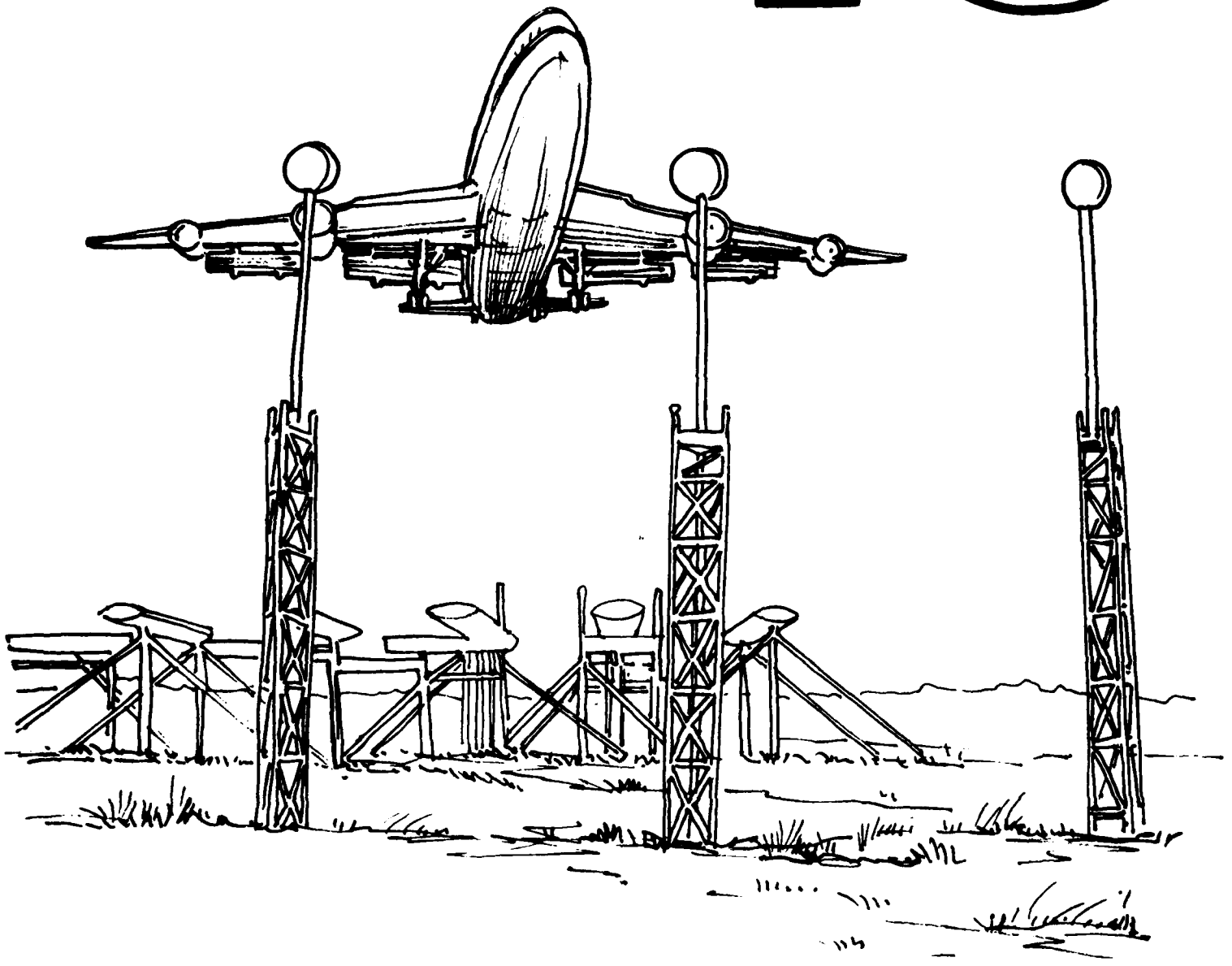
Dollars in Thousands

- | | |
|--|---------|
| (1) Development costs (based on 1983 dollars) | \$117.3 |
| (2) Annual savings after complete implementation | \$57.7 |

CALENDAR YEAR SCHEDULE



10



National Airspace System (NAS) Facilities Information Requirements

Chapter 10. NATIONAL AIRSPACE SYSTEM (NAS) FACILITIES INFORMATION REQUIREMENTS

Section 1. GENERAL

1000. PRESENT ENVIRONMENT, PROBLEMS, AND DEFICIENCIES

NAS Facilities Information includes various categories of information such as: description profiles on specific equipment, staffing standards, training of personnel, certification of personnel and equipment, utility and personnel costs, logistics information, and project management. These types of information are derived from approximately 50 information management systems that use at least 120 distinct data bases. In addition, numerous miniprocessor or microprocessor based systems are used throughout the agency. Non-standard procedures and data files have created incompatible systems. There is no electronic communication between most of these systems, and excess time and personnel are required to "pull" reports from one or more systems, consolidate information manually, and enter data into still other systems before tasks can be performed. As a result, data bases can be out of date and inaccurate because of manual transfer and can often contain duplicates of data held in other data bases.

a. The NAS Facilities Information area is currently in the process of implementing four major systems to consolidate and interface information requirements and to provide information in a more timely and efficient manner. These systems are:

- (1) NAS Facilities Information System (NFIS)
- (2) Maintenance Management System (MMS)
- (3) Telecommunications Management System (TMS)
- (4) Program Management System (PMS)

b. The future NAS Facilities and Equipment (F&E) procurement and installation processes are defined and scheduled in the NAS Plan document.

1001. LONG TERM GOALS

This plan calls for the development and implementation of a single system that, through several phases, will evolve into an efficient, cost-effective, and comprehensive management instrument. The initial, near term projects will streamline data files, transfer data bases to in-

house systems, combine and consolidate duplicative items, provide interim interfaces to other FAA data systems, and assess the impact of these actions on all users of the various systems. These actions, as well as future actions, will impact present agency policies and orders. Therefore, as a part of the plan, rewrites, consolidations, and cancellations of applicable orders and policies will be required, and some new policies and orders will be established. Major projects such as the PMS, MMS, and NFIS will be phased in over the next few years, thereby consolidating many existing automated data processing (ADP) systems and adding the required new systems and functions. Functions which presently are labor-intensive and require unsatisfactorily long lead times, e.g., facility performance analysis and trend analyses of specific types of data, will be available on an interactive request basis. The MMS environment will provide automated recordkeeping and more timely logistics management at the field office levels.

a. **Scope of Data Base.** The data base(s) will be extremely large and will contain information on facility/service/equipment profiles, performance, program management, and leased telecommunications. Distributed processing and data base linking will be used, and a national network of data bases will be established.

b. **Functions to be Supported.** Functions involved with the management of the National Airspace System will be supported.

c. **Access to System.** The system, or parts of it, will be accessed daily by field, regional, the FAA Technical Center, and Headquarters personnel from the Development and Logistics organization as well as by other FAA organizations.

d. **Interfaces.** The system will interface with other functional area systems including the Logistics and Inventory System (LIS), the Personnel Management Information System (PMIS), and the Uniform Accounting System (UAS). Interfaces will be required between the various infrastructure systems, also.

1002. INFORMATION SYSTEM EVOLUTION

a. Near Term (To 1985). The process of consolidating and enhancing present systems and data bases within the information area will continue. An analysis of information systems is being performed by the Transportation Systems Center (TSC). This analysis and other continuing efforts will result in the consolidation of some systems and/or data bases, the interface of common data base users, retirement of some systems/data bases, and movement of some files from system to system, making user access, system usage, and operation of the systems more effective. By 1985, the TSC development effort will provide a functional specification for the NFIS. The procurement and implementation of that system will result in a functioning management information system. Three of the major systems to be integrated under the NFIS will either be in operation or nearing completion:

(1) Functional specifications for the MMS will be complete and the MMS Phase I, Automated Record Keeping and Performance Reporting, will be implemented in 1985.

(2) PMS will be operational as a pilot program for the Advanced Automation Program Office in August 1983. The FAA Technical Center and the regions will have selected a similar pilot program for installation on in-house computers by October 1983 and July 1984 respectively. In the meantime, the Transportation Systems Center will be evaluating these pilot programs and making general recommendations on the overall PMS program objectives for an agency system.

(3) TMS will be operational by mid-1984.

b. Intermediate Term (To 1990).

(1) The NFIS will include a multilevel Program Management System—a program planning and tracking system that will be usable at every level from the Administrator to the program manager/sector field office levels. When totally implemented, this will be the agency's PMS.

(2) The TMS will be enhanced to incorporate leased communications transactions and provide analysis capability to the regional/field level, allowing management access to telecommunications management information.

(3) In 1986, MMS Phase II, i.e., enhanced interfacing capabilities and wider access capabilities, will be achieved. The final phase of MMS will be achieved by 1987. The implementation phases of MMS will streamline the maintenance and F&E activities such that at least 15 systems in use in 1983 will be replaced by MMS by 1986. The data bases of old systems will be incorporated with MMS. Essentially, every data base required to carry out maintenance and F&E activities will be accessible to MMS. The MMS will also provide access to and from "external" systems such as the CPMIS, UAS, and NFDC.

c. Long Term (To 2000). The multifaceted NFIS will be integrated into the fabric of the agency with required interfaces and accesses via sophisticated networking and communications to data bases and/or files under the purview of other organizations. The environment will be one of rapid access and update, a nearly paper-free operation, and terminal oriented operations. Each agency organization will have full responsibility of one or more data bases, i.e., the information requirements, currency requirements, and security requirements of users will be provided by the responsible organization.

1003. RETURN ON THE INVESTMENT

The result of this plan will be more timely and efficient information and a reduced investment in employee handling of data. Developmental costs are offset by reductions of timesharing costs, avoidance of personnel costs, and better tracking analysis and management. Payback of development costs will be in approximately three years; however, the return on the investment will be immediate in terms of improved management of the NAS Plan and 80's Maintenance Program implementation.

Table 10.1 SUMMARY OF COSTS AND SAVINGS
(Dollars in Millions)

	1983	1985	1990	2000
Cumulative Savings	0.2	2.3	42.6	135.4
Cumulative Project Costs	4.3	13.3	16.7	16.7
Net	(4.1)	(11.0)	25.9	118.7
Discounted Cumulative Savings	0.2	2.0	26.6	55.8
Discounted Cumulative Project Costs	4.3	12.1	14.6	14.6
Discounted Net	(4.1)	(10.1)	12.0	41.2
Direct FTE Cumulative Savings	1	8	34	34

1004. IMPACTS

a. Organizational. The NAS Facilities plan calls for top management involvement, approval, and monitoring of all information resources with continuing review and evaluation. Data base access, manipulation, and retrieval will be possible at all organization levels.

b. Program. Implementation of the four major systems will enhance the operational system while providing:

(1) summary management information for all levels of management

(2) efficient data base management

(3) controlled, timely, and easy access to data bases by all levels of management

- (4) life cycle accountability
- (5) capture of information at the source
- (6) data sharing by all users
- (7) direct relationship of systems to goals, objectives, and plans
- (8) convenient access to project management tools
- (9) controlled terminal access by field, regional, and Headquarters personnel

1005. SUMMARY OF CHANGES

a. Procedural. A single NAS Facilities Information System will be implemented with three major systems operating under it. The systems will be MMS, TMS, and PMS. Terminals will be used by managers at all levels on a transactional (ad hoc) basis. Data bases will be accessible within strictly controlled security bounds by

almost any organization within the FAA. Fewer data bases will exist with each data base being maintained by one organization and shared by many organizations. Fewer personnel will be processing information between the data source and the user. Many more users will be using the information because of sharing and ease of access. Data will be more current which will improve management's ability to react sooner to trends in operations. Finally, improved communications will result in more timely coordination, and managers will share common information.

b. Automated Data Processing (ADP). The MMS will derive management information from existing Remote Maintenance Monitoring (RMM) hardware. PMS will reside on in-house computers and other government host computer equipment. An existing FAA or government computer system will be used for the TMS.

Section 2. PROJECTS SUMMARY

TABLE 10.2 PROJECT NAMES, SCHEDULES, RELATED AGENCY OBJECTIVES, AND OFFICE OF PRIMARY RESPONSIBILITY (OPR)

<i>Projects</i>	<i>Start</i>	<i>Completion</i>	<i>Related Agency Objectives</i>	<i>OPR</i>
Maintenance Management System (MMS)	1982	1986	1, 3, 4, 8	AES
Program Management System (PMS)	1983	1987	1, 4, 8	AES
• Technical Center	1983	1984	1, 4, 8	AES
• Regional PMS	1984	1986	1, 4, 8	AES
• Advanced Automation Program Office AAP PMS	1983	1984	1, 4, 8	AES
Telecommunications Management System (TMS)	1982	1984	1, 3, 4, 8	AES
NAS Facilities Information System (NFIS)	1983	1990	1, 4, 8	AES

1. Maintain or Improve Current Levels of U.S. Aviation Safety
2. Prepare and Implement Programs in Support of the Agency's Human Relations Policy
3. Continue the FAA's Long Range Planning Program
4. Complete Implementation of the Management Organization and Establish the Systems and Procedures Needed to Assure Efficient Allocation of Human and Fiscal Resources
5. Aggressively Pursue Opportunities to Reduce, Eliminate, or Otherwise Improve the Agency's Regulatory Burden
6. Improve FAA's Preeminence as the World Aviation Authority
7. Continue and Expand the Agency Program for Employment and Advancement of Handicapped, Minorities, and Women Employees
8. Provide All Services of the FAA, Excluding the Airways Modernization Program, at a Cost Not Greater than the 1980 FAA Budget, Adjusted for Inflation

FIGURE 10.1 AGENCY OBJECTIVES FOR FY 1983

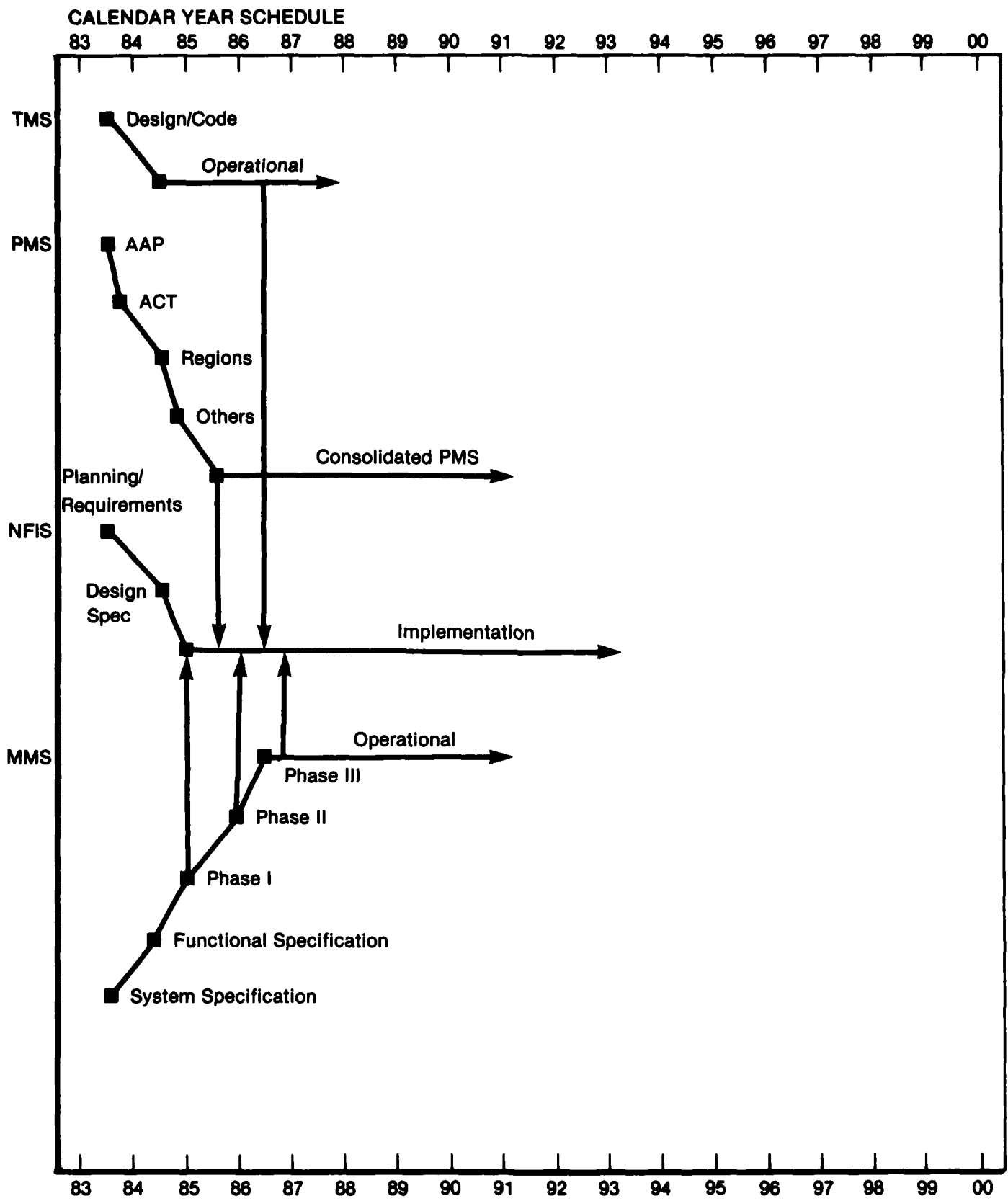


FIGURE 10.2 PROJECTS EVOLUTION

Section 3. SPECIFIC PROJECTS

1006. PROJECT: Maintenance Management System (MMS)

a. Purpose: To improve the cost-effectiveness of maintenance of the NAS services, facilities, and equipment in support of the 80's maintenance concept.

b. Approach: This project is being developed using system and functional specifications and implemented in three phases:

(1) Phase I—automated recordkeeping, performance reporting, facility/service/equipment profile.

(2) Phase II—integration of remaining systems into MMS.

(3) Phase III—postimplementation evaluations and enhancements.

c. Equipment Requirements and Implications: MMS will reside on equipment purchased for the Remote Maintenance Monitoring System (RMMS).

d. Schedule:

(1) Complete system specification	1983
(2) Complete functional specification	1984
(3) Implement Phase I	1985
(4) Implement Phase II	1986
(5) Implement Phase III	1986
(6) Integrate into NFIS	1985-1986

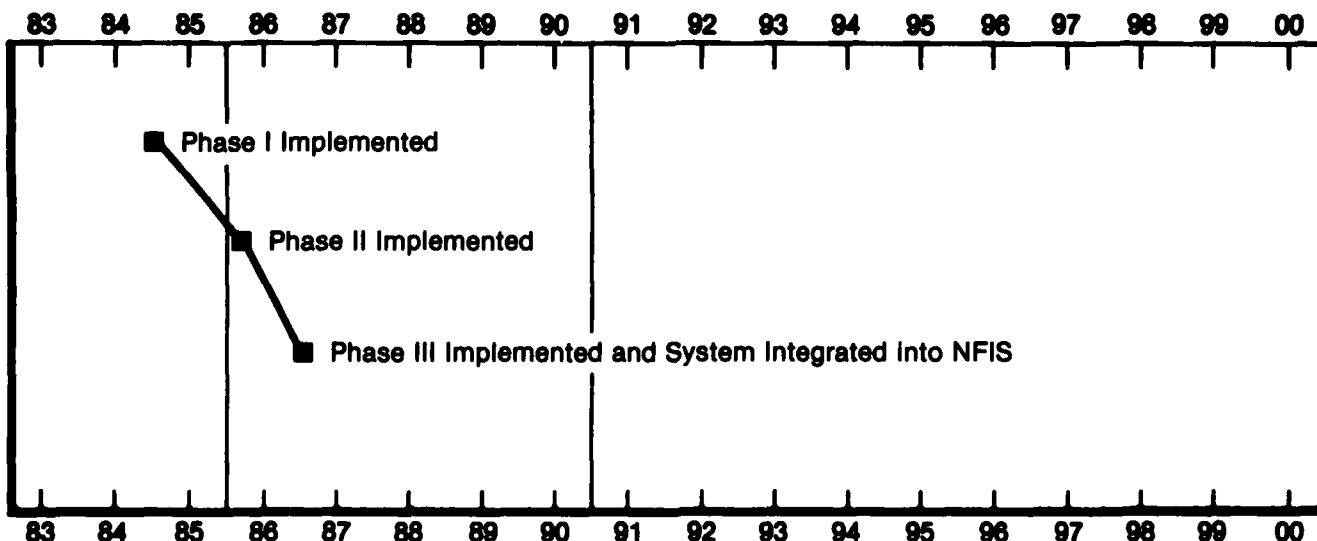
e. Related Projects and Activities: The 80's Maintenance Program, as well as over 15 proposed and existing systems, will be integrated into MMS. Interfaces will be provided to UAS, TMS, PPIMS, LIS, PMS, CPMIS, AMIS/AFIS, NFDC.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$3,317.9
(2) Annual savings after complete implementation	\$1,963.8

CALENDAR YEAR SCHEDULE



1007. PROJECT: Program Management System (PMS)

a. Purpose: To improve the efficiency in the allocation of human, fiscal, and facility resources by the development of a comprehensive program management system that will provide timely and reliable information to assist in the planning and controlling of programs.

b. Approach: Develop long range plan; identify and install prototype systems; modify current systems; and design and install comprehensive system.

c. Equipment Requirements and Implications: Reduction in timeshare use. Plans are to use available FAA resources.

d. Schedule:

(1) Long range plan	1983
(2) Install prototypes	1983
(3) Near term improvements	1984
(4) System design	1984
(5) Implementation	1987
(6) Integrate into NFIS	1985—1987

e. Related Projects and Activities:

(1) Current systems: Integrate on-going program management systems.

(2) Development and Logistics Organization: All planning, financial, facility, and personnel information systems.

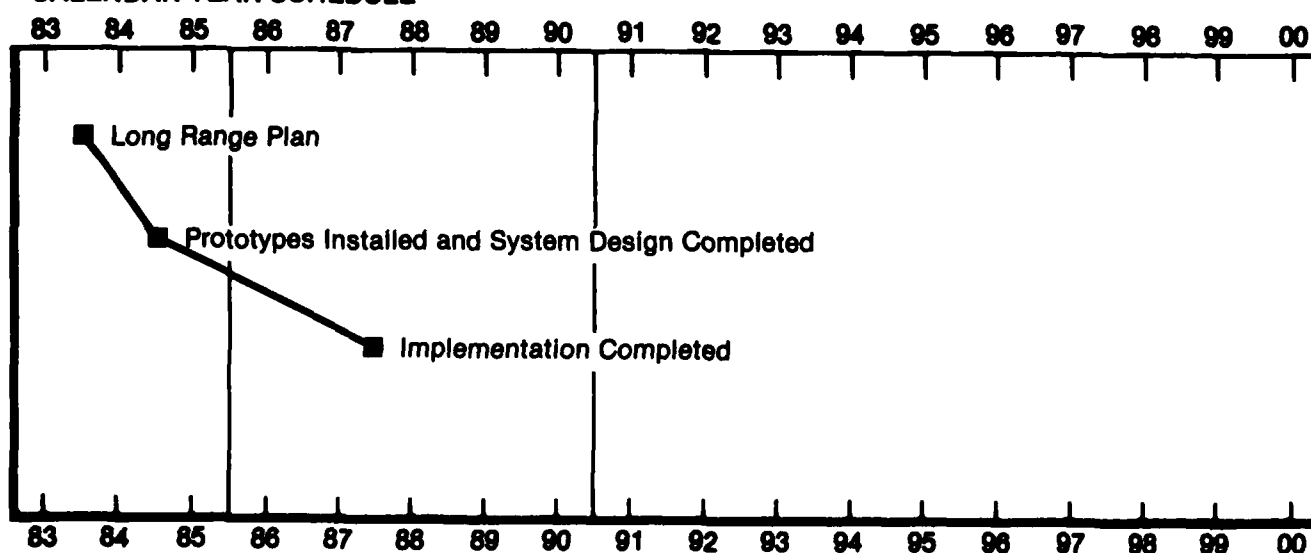
(3) Other: Interfaces to be developed with national financial and personnel systems.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$4,787.2
(2) Annual savings after complete implementation	\$4,002.1

CALENDAR YEAR SCHEDULE



1008. PROJECT: FAA Technical Center Program Management System

a. Purpose: To improve the efficiency of the Technical Center's allocation of human, fiscal, and facility resources by the development of a comprehensive Program Management System.

b. Approach:

(1) **Action Plan**—A detailed action plan has been developed which establishes a program manager, defines matrix management responsibilities, and provides for continuing performance evaluation.

(2) **Strategic Plan**—A long range plan will be developed to provide direction to all organizations. It will apply the Administrator's goals and objectives, administration planning documents, and congressional direction to operations in a technical function and management program structure.

(3) **Operating Plan**—An operating plan will be developed to expand the Strategic Plan to the short term objectives, resources, and schedules to all organizational elements.

(4) **Evaluation Plan**—This will be developed to define the evaluation criteria and measurement elements of all organizations, programs, and employees.

c. Equipment Requirements and Implications: Plans are to use in-house resources.

d. Schedule:

(1) System planning	1983
(2) Preliminary design	1983
(3) Prototype system	1983
(4) System operational/complete	1983—1984
(5) Integrate into NFIS	1984—1985

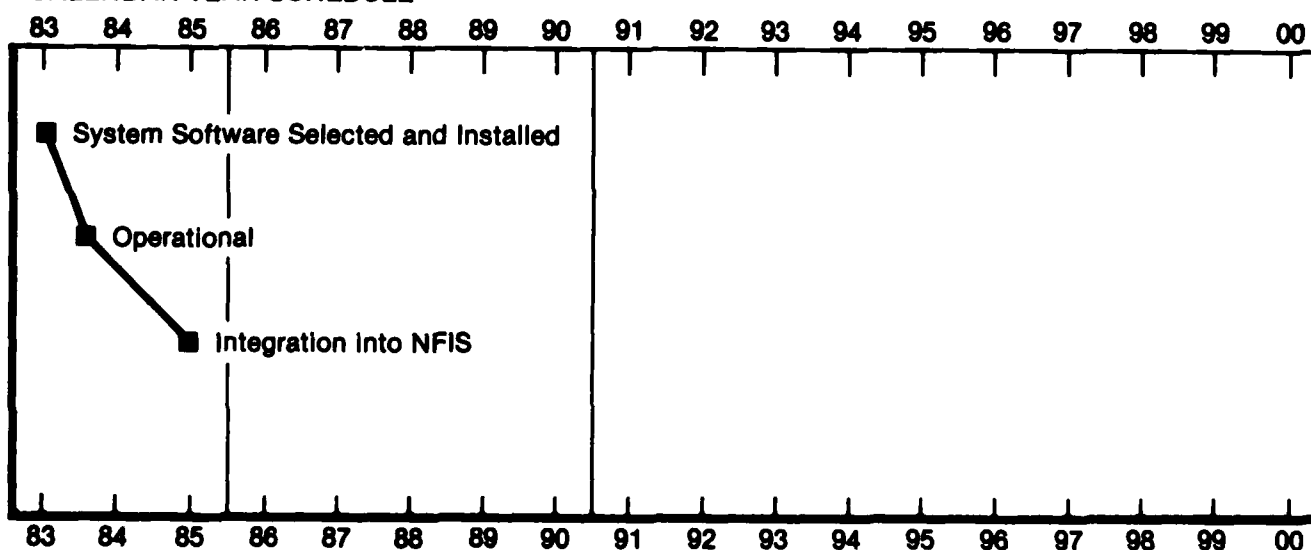
e. Related Projects and Activities: The Technical Center financial, cost accounting, planning, facilities, and personnel systems will be integrated with the Program Management System. Interfaces will be developed with the Development and Logistics organization and national financial and personnel systems.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$398.2
(2) Annual savings after complete implementation	\$246.8

CALENDAR YEAR SCHEDULE



1009. PROJECT: Regional Project Management System

a. Purpose: To ensure the efficient utilization of the regional resources of management and strategic information. This project will incorporate present and future projects into an improved, reliable, cost-effective, and realistic system which will improve the productivity of the regions' human and fiscal resources.

b. Approach: A core work group, consisting of the Airway Facilities Division and Management Systems Division, will analyze, evaluate, and establish a prototype Facilities and Equipment (F&E) network project planning and management data base that can be processed on timesharing services. An off-the-shelf project planning and management processing system will be used until a processing system can be obtained on the in-house equipment. Procurement specifications will be established for the acquisition of a general purpose project planning and management processing system hosted on in-house equipment to support the F&E data base. This data base will be relocated from timesharing and adapted to the new processing system.

c. Equipment Requirements and Implications: Timeshare services may be used to develop the project. The host system will be the in-house equipment. Work

stations must be provided at the sectional level of management in the regional offices and the sector manager offices. The regional office work stations will be dumb terminals with printers. Graphic terminals will also be installed at key work stations. Intelligent terminals will be available for F&E on-site data entry at major installation projects. The field office work stations will be intelligent terminals with printers and dial-up communication.

d. Schedule:

(1) Evaluation of requirements	1984
(2) Software developed (timeshare)	1984
(3) Implementation	1984
(4) Contract for hardware	1984—1985
(5) Transition to in-house system	1985
(6) Operational	1985—1986
(7) Integrate into NFIS	1986

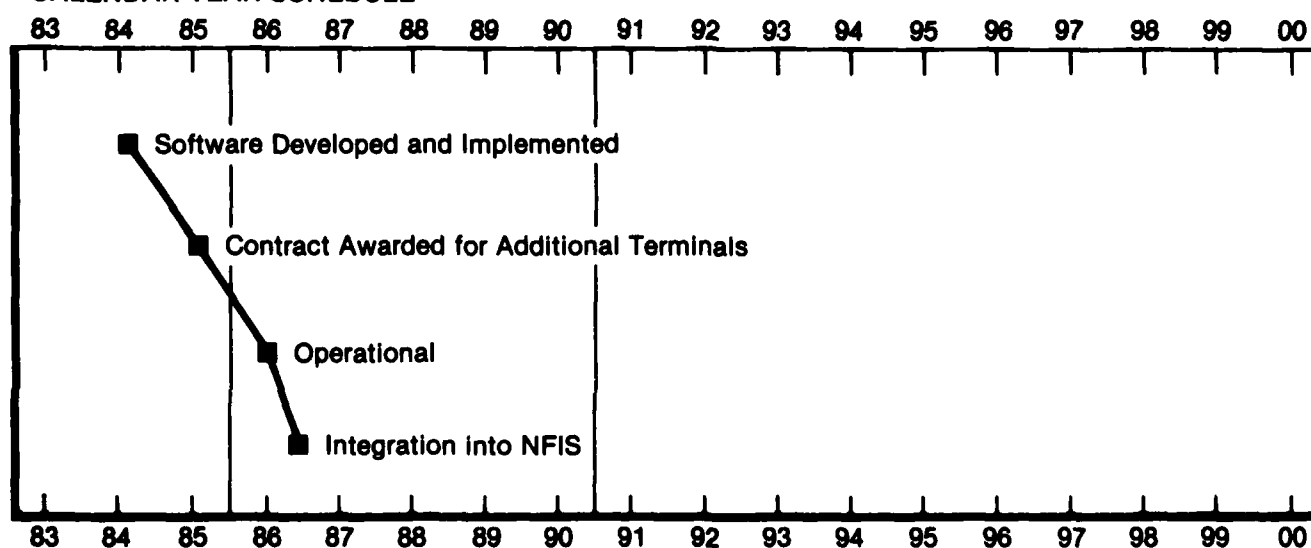
e. Related Projects and Activities: MMS, PMS, and AAP Program Management Information System

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$555.4
(2) Annual savings after complete implementation	\$159.3

CALENDAR YEAR SCHEDULE



1010. PROJECT: Advanced Automation Program Office (AAP) Program Management System

a. Purpose: To develop a Program Management System which provides timely and reliable information assisting the AAP in planning and controlling the Advanced Automation Program.

b. Approach: Lease with the option to purchase software for a pilot PMS program. After evaluating the pilot program, a decision will be made concerning the future uses in the overall PMS.

c. Equipment Requirements and Implications: General purpose terminals will be used at Headquarters, field sites, regional offices, and at some support contractor sites. Additional equipment will include graphics terminals, remote job entry stations, plotters, and a high speed printer.

d. Schedule:

(1) System plan	1983
(2) Preliminary design	1983
(3) Pilot program	1983
(4) Operational/complete	1983—1984
(5) Integrate into NFIS	1985

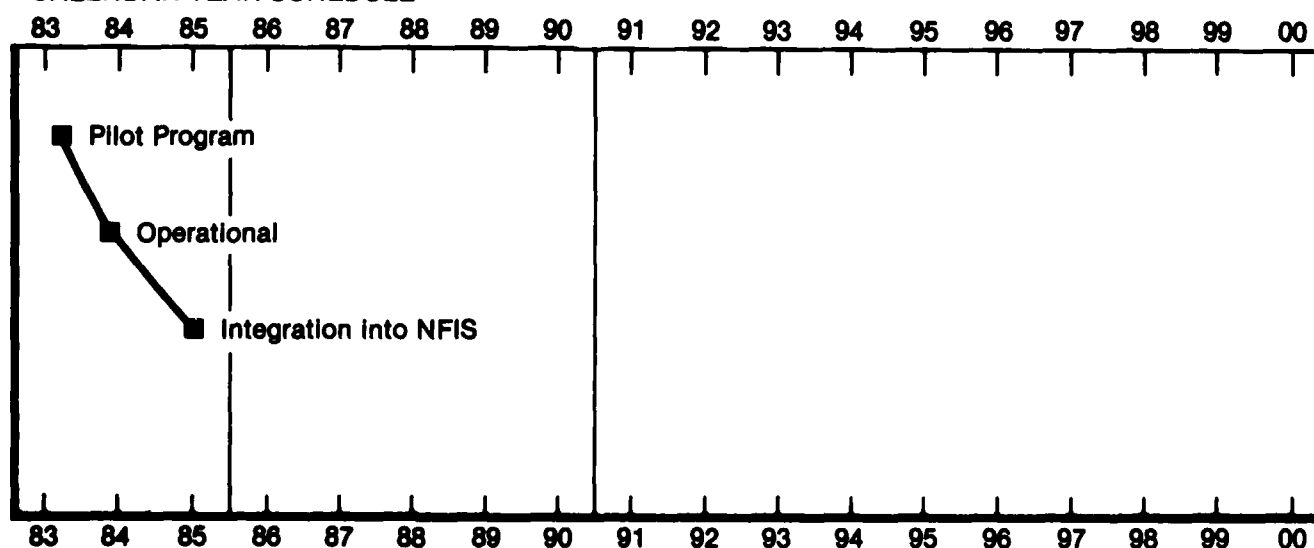
e. Related Projects and Activities: This project is related to Program Management System activities in the Development and Logistics and the Policy and International Aviation organizations.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$1,099.6
(2) Annual savings after complete implementation	\$1,200.0

CALENDAR YEAR SCHEDULE



1011. PROJECT: Telecommunications Management System (TMS)

a. Purpose: To plan, acquire, and manage FAA owned and leased communications lines and equipment required by NAS in an efficient manner.

b. Approach: The present system, residing on the TSC computer, has limited access, does not provide required service, and results in difficult and unreliable updating. The present system software design does not permit it to be improved to meet current requirements. A contract was awarded in 1982 for the design of TMS to replace the existing system. Implementation is expected in 1984.

c. Equipment Requirements and Implications: The system will reside at the Transportation Systems Center, Transportation Computer Center, or another government computer. Work stations consisting of intelligent terminals, printers, and communications equipment will be placed in Headquarters and regional offices.

d. Schedule:

(1) System design	1982—1983
(2) Software development	1983—1984
(3) System operational/complete	1984
(4) Integrate into NFIS	1986

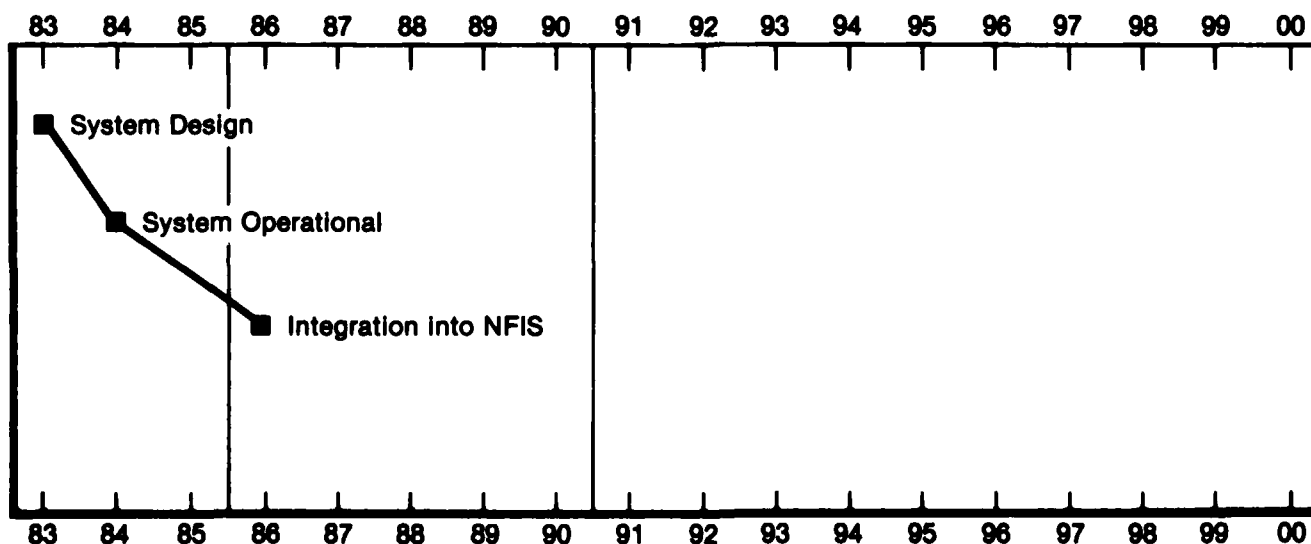
e. Related Projects and Activities: MMS, NADIN, Radar Microwave Link (RML) Trunking Network Design, RML/Satellite Trunking system replacement/expansion, data multiplexing network, and the Development and Logistics organization management information systems.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$1,881.8
(2) Annual savings after complete implementation	\$616.9

CALENDAR YEAR SCHEDULE



1012. PROJECT: NAS Facilities Information System (NFIS)

a. Purpose: To support the administrative, fiscal, programmatic, and performance objectives of the Development and Logistics organization with an integrated management information system.

b. Approach: Develop and implement a supervisory processing MIS that integrates the MMS, PMS, and TMS; provide an interface to other FAA information systems; and provide information for executive management.

c. Equipment Requirements and Implications: Terminals and related equipment will be required to access data bases and evaluation and analysis application programs.

d. Schedule

(1) Planning	1983—1984
(2) Requirements	1983—1984
(3) Design specifications	1984—1985
(4) Near term improvements	1983—1984
(5) Complete implementation	1990

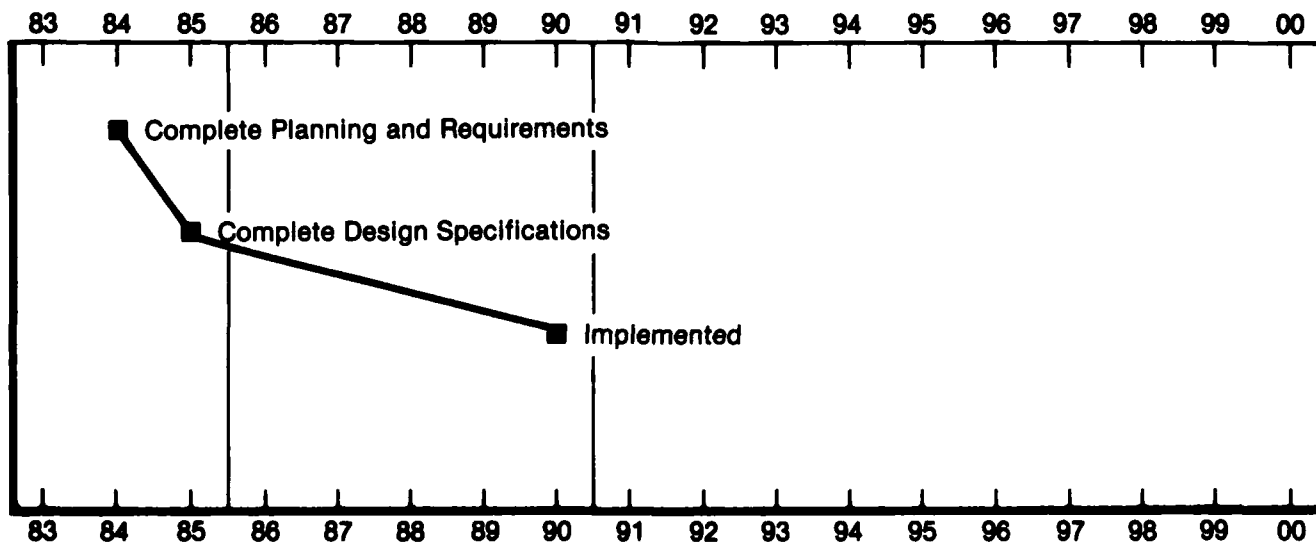
e. Related Projects and Activities: TMS, MMS, PMS, and other management information systems.

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$4,694.2
(2) Annual savings after complete implementation	\$1,092.1

CALENDAR YEAR SCHEDULE



11



**Office Automation and
Management Support**

Chapter 11. OFFICE AUTOMATION AND MANAGEMENT SUPPORT

Section 1. GENERAL

1100. PRESENT ENVIRONMENT, PROBLEMS, AND DEFICIENCIES

Office Automation and Management Support cover a wide variety of automation tools and techniques that are not specific to a particular information area. They represent the application of automation techniques for improving productivity and supporting the overall automation program.

a. Office automation covers tasks such as:

- Electronic spread sheets
- Document preparation/word processing
- Data base management systems
- Business graphics
- Electronic mail/communications
- Electronic filing
- Statistical analysis
- Electronic calendaring and scheduling
- Electronic phone messaging
- Automated spelling checkers and dictionaries
- Electronic reminders/tickers
- Financial modeling
- Forms management
- Source data entry and editing

b. Automation in management support provides ADP support across functional and organizational lines in performing functions such as:

- Data Base Management Systems
- Data Resource Dictionaries/Directories
- Project Tracking Support Systems
- Hardware/Software Utilization Systems
- Computer Based Instruction
- Computer Supported Graphics Systems

c. **Past Evolution in FAA.** The situation today in FAA is the result of our approach during the last few years as office automation started to grow at increasing rates. FAA's first experiences with office automation came in the 1960's with word processing. Initially, word processing was viewed as a replacement for the typewriter, and its management was approached in the same

way as the management of electric typewriters. Equipment was acquired as the result of separate cost/benefit studies conducted by the office desiring the equipment. With the advent of commercial timesharing and the installation of 9020 computers in the air route traffic control centers (ARTCCs) in the early 1970's, the beginnings of office oriented data processing appeared. In the ARTCCs, available time on the 9020's was used to develop a variety of useful applications for center management. In the Washington and regional office environment, commercial timesharing was used in much the same way in many cases. In 1980—1981, the Aviation Standards organization developed the Field Office Modernization (FOM) program aimed at providing a range of office automation functions in their field offices to improve productivity. At the same time, the Airway Facilities organization began to install microcomputers in their field offices to support information programs, thereby providing equipment to support office automation work at the field office level. In other efforts, Computer Based Instruction (CBI) was pilot tested in the late 1970's and became accepted in the 1980—1982 time period as a cost beneficial method for delivering training to the air traffic control facilities and to airway facilities maintenance personnel. Computer assisted graphics were used in the Instrument Approach Procedures Automation program. This became the first and, currently, the only systematic effort of using computer graphics in FAA.

d. **Results of the Past Evolution.** The approach to acquisition of equipment and software has been specific project or application oriented. The result has been widely varying equipment in both data and word processing applications that cannot readily communicate with each other or otherwise support each other. The management approach has focused on developing standard management procedures for documenting cost/benefits, not on developing technical standards for the resulting equipment acquisitions. By depending on each office, facility, or function to identify its own needs, there are wide variances in levels of support among offices and facilities. These gaps in coverage mean that many useful capabilities are not available to a great deal of the agency.

e. Approach to Future Improvements. The key element in addressing the future will be to view the potentials for improvements from a national perspective, looking across organizational, functional, and project lines. More specifically the approach calls for:

- Using existing equipment, software, and data bases to support improvements as much as possible.
- Making more effective or intensive use of existing or planned equipment and software needed for national applications and programs.
- Assessing and acting on cost/benefit relationships for each set of capabilities or groups of offices served whenever the "sharing, value added" approach does not apply.

1101. LONG TERM GOALS

a. Provide each manager and organization with those automation tools which provide effective access to management information and support tools and improve personal and organizational productivity and effectiveness.

b. Control the cost of large scale equipment, software, and communications acquisitions through the judicious distribution to the ultimate user of small-scale equipment, software, and management data bases.

1102. INFORMATION SYSTEM EVOLUTION

a. Near Term (To 1985). During this period, a national office automation program for developing requirements and standards for equipment and software for a range of work stations, local area networks, and other key elements will be developed. The installation of approved office automation programs, such as the Field Office Modernization Program, will be completed. The ARTCC automation project will be initiated. The planning and approval processes for further field office automation projects will be taking place during this time period. The installation of the Air Traffic facility computer based instruction (CBI) program will be completed, and decisions will be made on the scope and direction of other CBI programs in FAA. Pilot computer assisted graphics projects in Washington Headquarters and the Southern and New England Regions will be installed. Decisions will be made concerning the key elements of ADP and data management systems in FAA and the need to supplement the large scale project management system being acquired in support of National Airspace System (NAS) facilities management.

b. Intermediate Term (To 1990). A comprehensive implementation plan to replace obsolescing and heterogeneous office automation equipment/software in line with technical standards will be prepared. Action to obtain a long term computer based instruction system will be initiated and the installation of Airway Facilities field CBI equipment and software will be completed.

Based on the results of the pilot program, a long term computer assisted graphics program will be established. The installation of all aspects of information management and information cost control systems will be completed.

c. Long Term (To 2000). The implementation of the following projects will be completed: a comprehensive office automation equipment and software system, a long term computer based instruction delivery system, and computer assisted graphics and related systems.

1103. RETURN ON THE INVESTMENT

The return on the investment in office automation and management support tools is directly related to productivity improvement. The time it will take the work force to perform their office functions, conduct training, retrieve and update engineering drawings, for example, will be markedly reduced by the initiatives in this area.

Table 11.1 SUMMARY OF COSTS AND SAVINGS
(Dollars in Millions)

	1983	1985	1990	2000
Cumulative Savings	0.0	15.5	130.0	365.6
Cumulative Project Costs	0.4	17.6	29.0	32.4
Net	(0.4)	(2.1)	101.0	333.2
Discounted Cumulative Savings	0.0	12.9	84.3	158.5
Discounted Cumulative Project Costs	0.4	15.4	23.1	24.1
Discounted Net	(0.4)	(2.5)	61.2	134.4
Direct FTE Cumulative Savings	—	245	404	404

1104. IMPACTS

a. Organizational. The organizational impact of this program area will be very extensive. The equipment and software delivered through this program, particularly in conjunction with specific supported applications, have the potential for redistributing workload, responsibility, and authority in many different ways. In addition, organizational management at every level will be better equipped to perform their functions and thus have the potential to be more effective and more accountable for results.

b. Program. The impact of this program will be on personnel. First, many of the tools made available under this program area have major productivity benefits, which translate into fewer people doing specific work. In most cases, these productivity benefits will permit people to do different work, but in some cases there will be staffing adjustments. The second area

of personnel impact lies in the demand for new skills. In the past, only a few hundred FAA employees have had work responsibilities related to automated data processing (ADP). In the future, almost all employees will relate to ADP to some degree. Preparation for this impact is addressed in Chapter 13—Human Interface and Training.

1105. SUMMARY OF CHANGES

a. Procedural. The extension of office technology and management support and the development of computer

assisted graphics systems will provide management with tools necessary for significant productivity improvement.

b. Automated Data Processing (ADP). The present levels of support among offices and facilities will be evaluated for more effective use. Future acquisitions of equipment, software, and communications will be analyzed from a national perspective rather than from individual office perspectives.

Section 2. PROJECTS SUMMARY

TABLE 11.2 PROJECT NAMES, SCHEDULES, RELATED AGENCY OBJECTIVES, AND OFFICE OF PRIMARY RESPONSIBILITY (OPR)

<i>Projects</i>	<i>Start</i>	<i>Completion</i>	<i>Related Agency Objectives</i>	<i>OPR</i>
OFFICE AUTOMATION:				
• Extension of Office Technology to Selected Field Facilities	1984	1986	4, 8	AMS
• Establish a Uniform National System of Office Technology Delivery	1983	1985	4, 8	AMS
MANAGEMENT SUPPORT:				
• Data Base Management System (DBMS) and Data Dictionary	1983	1985	4, 8	AMS
• Data Processing Hardware/Software Utilization System	1983	1984	4, 8	AMS
• Computer Based Instruction (CBI)	1983	1997	4, 8	APT
• Project Tracking	1983	1984	3, 4, 8	AMS
COMPUTER GENERATED GRAPHICS:				
• Engineering Drawings	1983	1986	3, 4, 8	AMS
• Studies/Analysis Graphics	1984	1987	3, 4, 8	AMS
• General Graphics	1983	1991	4, 8	AMS

1. Maintain or Improve Current Levels of U.S. Aviation Safety
2. Prepare and Implement Programs in Support of the Agency's Human Relations Policy
3. Continue the FAA's Long Range Planning Program
4. Complete Implementation of the Management Organization and Establish the Systems and Procedures Needed to Assure Efficient Allocation of Human and Fiscal Resources
5. Aggressively Pursue Opportunities to Reduce, Eliminate, or Otherwise Improve the Agency's Regulatory Burden
6. Improve FAA's Preeminence as the World Aviation Authority
7. Continue and Expand the Agency Program for Employment and Advancement of Handicapped, Minorities, and Women Employees
8. Provide All Services of the FAA, Excluding the Airways Modernization Program, at a Cost Not Greater than the 1980 FAA Budget, Adjusted for Inflation

FIGURE 11.1 AGENCY OBJECTIVES FOR FY 1983

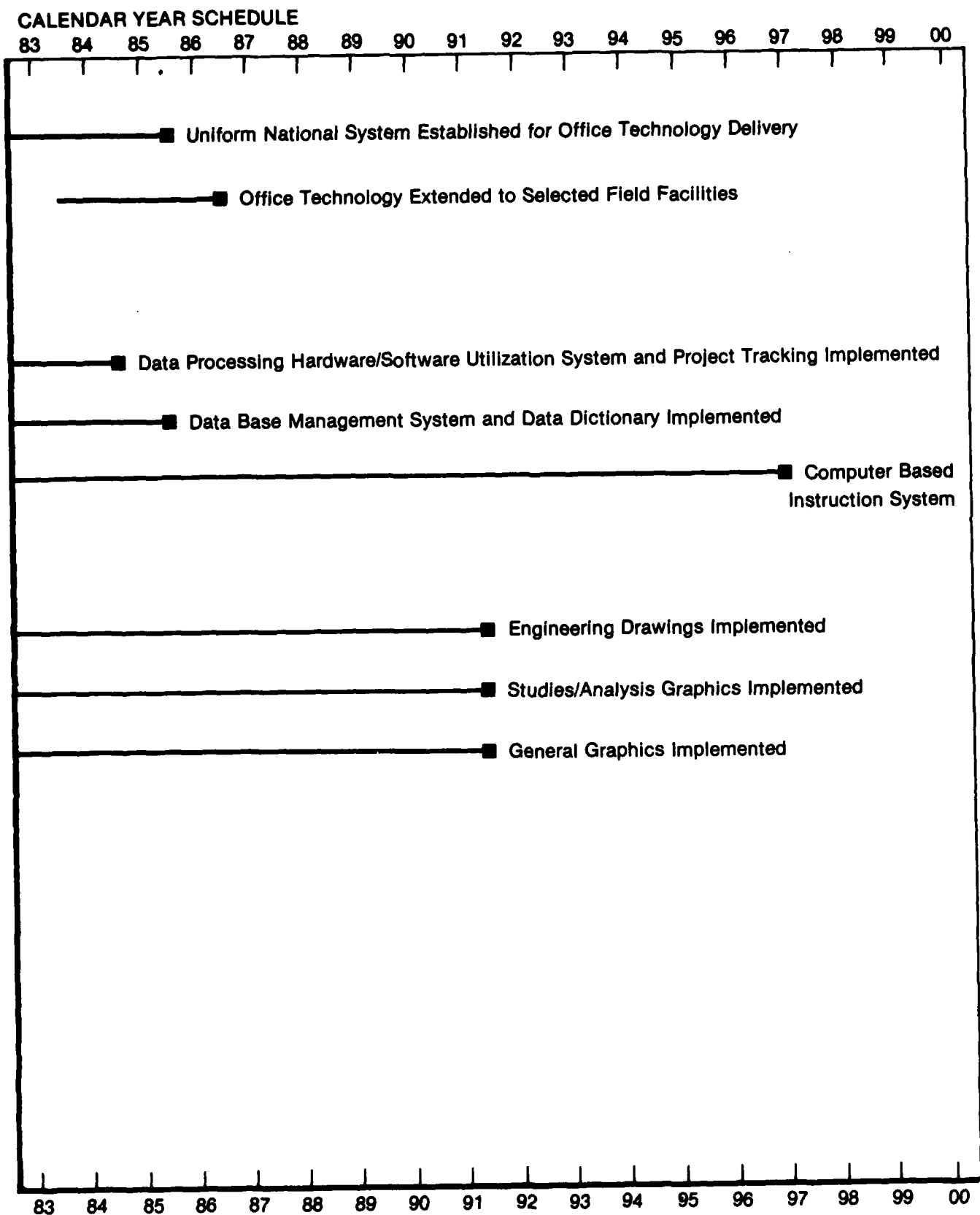


FIGURE 11.2 PROJECTS EVOLUTION

1106. PROJECT: Extension of Office Technology to Selected Field Facilities

a. Purpose: To increase the productivity of administrative management functions performed in field facilities by providing support capabilities through office technology. These capabilities include analytical support, data retrieval and entry, data base management, etc. The administrative management functions supported include personnel scheduling, training support, performance measurement, and document preparation.

b. Approach: Action to install office technology in each type of office would depend upon a cost/benefit study that demonstrates real productivity increases which are sufficient to amortize the cost or the "value added" approach. In the latter approach, the basic equipment/software requirement is generated by a specific system need and the office technology productivity gains are substantial enough "value added" to warrant the small additional investment needed for its support.

c. Equipment Requirements and Implications: The work stations and software required to support office technology in the field are microprocessors, CRT terminals, and low speed printing devices. Software required is off-the-shelf analytical, word processing, and data base management software.

d. Schedule:

- (1) Complete installation of Field Office Modernization equipment in each Aviation Standards field office (work already funded and underway). 1984
- (2) Complete installation of Compustar or equivalent equipment in Airway Facilities field offices (work already funded and underway). 1984
- (3) Install systems in air route traffic control centers (ARTCCs) per currently completed feasibility study. 1984
- (4) Extend tailored version of ARTCC system in larger terminal and flight service facilities (Level IV & V terminals, Level III flight service stations). 1984-1985
- (5) Install system in Airports District Offices coincident with need to support remote data entry into the National Flight Data Center system. 1986
- (6) Consider alternative means of tying in visual flight rule towers, low activity flight service stations, and other field facilities not included above. 1986

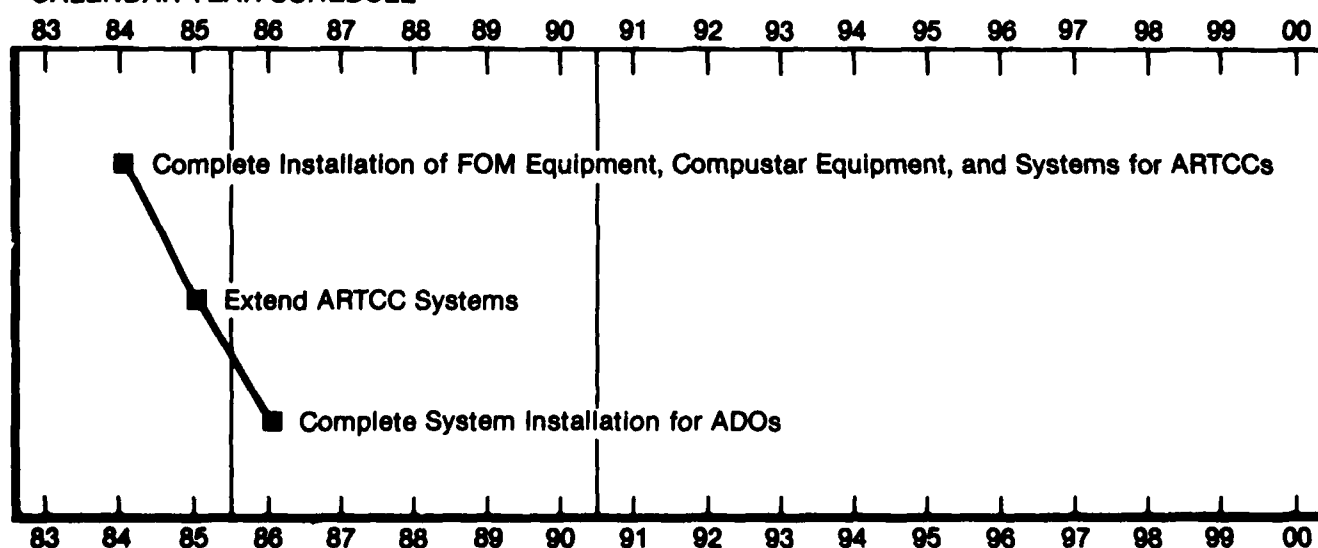
e. Related Projects and Activities: None

f. Costs:

Dollars in Thousands

- (1) Development costs (based on 1983 dollars) \$2,899.2
- (2) Annual savings after complete implementation \$3,048.7

CALENDAR YEAR SCHEDULE



1107. PROJECT: Establish a Uniform National System for Office Technology Delivery

a. Purpose: This project is designed to examine FAA's experience with the interim arrangements established during the 1983-1986 period and define the uniform national system that will best meet FAA's continuing needs during the '90's.

b. Approach: Requirements will be determined for (1) functional needs, (2) hardware/software standards for a range of work station configurations and for added benefits software, (3) word processing protocol translators, (4) local area networks, (5) equipment standardization within associate administrator complexes and (6) executive level data access. The requirements for all applicable administrative and operational hardware and software procurements will be determined using one of three approaches—added benefits, sole benefits, or aggregate benefits.

c. Equipment Requirements and Implications: None

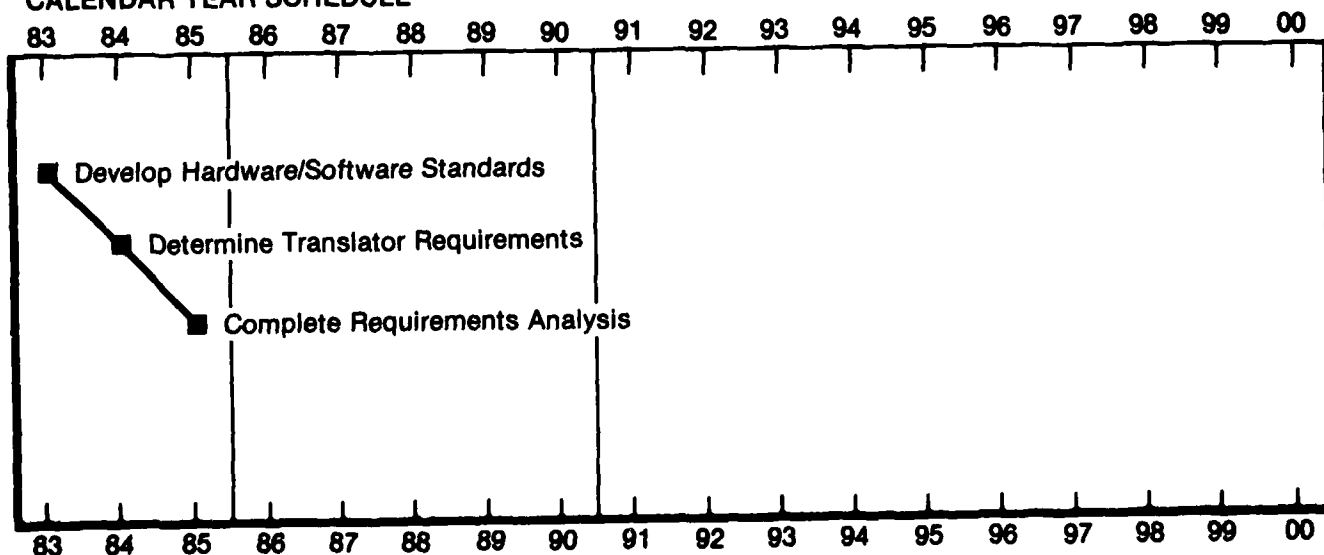
d. Schedule:

- | | |
|---|-----------|
| (1) Develop hardware/software standards | 1983 |
| (2) Determine translator requirements | 1984 |
| (3) Determine requirements based on added benefits, sole benefit, and aggregate benefits approaches | 1984-1985 |
| (4) Determine local area network requirements | 1985 |
| (5) Determine requirements/opportunities for executive level access | 1985 |

e. Related Projects and Activities: Extension of Office Technology to Field Facilities

f. Costs:*Dollars in Thousands*

- | | |
|--|-----------|
| (1) Development costs (based on 1983 dollars) | \$1,725.0 |
| (2) Annual savings after complete implementation | \$1,367.6 |

CALENDAR YEAR SCHEDULE

1108. PROJECTS: Data Base Management System (DBMS) and Data Dictionary

a. Purpose: This project is to select the Data Base Management System(s) needed by FAA to maximize data uniformity and interchangeability and minimize DBMS maintenance and training needs. Concurrently, an approach to data base management using a data dictionary will be implemented in order to reduce data redundancy and insure data consistency and accuracy. In the long term, a controlled selection and use of both Data Base Management Systems and Data Dictionaries are needed if FAA is to achieve such policy goals as single point of data entry, user controlled data integration, etc.

b. Approach: A comprehensive survey of FAA's current and future needs for DBMS and data dictionaries will be made. An important element in this survey will be the planned applications contained in this Information Resources Management Plan. Based on the survey, acquisition action will be initially designed to obtain needed software on a commercially competitive basis.

c. Equipment Requirements and Implications: Proprietary software

d. Schedule:

- | | |
|--|------|
| (1) Complete comprehensive needs survey | 1983 |
| (2) Prepare DBMS and Data Dictionary strategy, acquisition, and implementation plan and specifications | 1983 |
| (3) Complete acquisition process including benchmarking | 1984 |
| (4) Complete installation process including user training | 1984 |
| (5) Complete initial implementation of systems | 1985 |

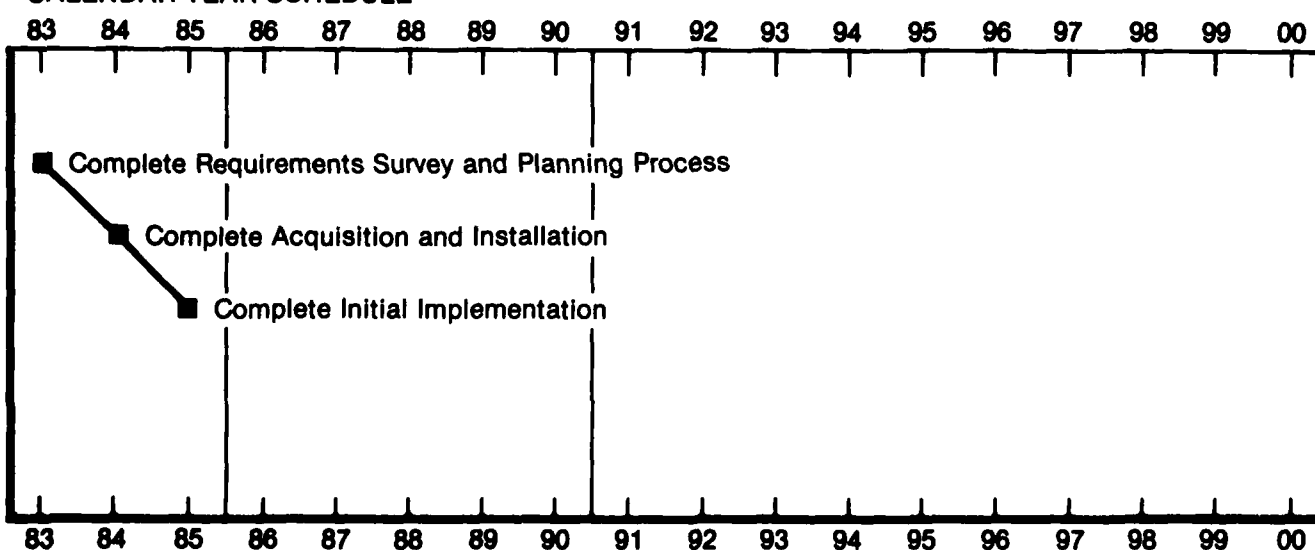
e. Related Projects and Activities: None

f. Costs:

Dollars in Thousands

- | | |
|--|-----------|
| (1) Development costs (based on 1983 dollars) | \$1,798.6 |
| (2) Annual savings after complete implementation | \$415.6 |

CALENDAR YEAR SCHEDULE



**1109. PROJECT: Data Processing Hardware/
Software Utilization System**

a. Purpose: Provide FAA data processing and general management with information on ADP hardware, application software, and special purpose/operating software that is existing and planned. Such an inventory supplemented by the appropriate analytical tools will:

- (a) promote standardization and sharing of resources,
- (b) provide the analytical basis for future hardware and software procurements,
- (c) satisfy OMB A-71 security requirements,
- (d) satisfy OMB Circular A-11 reporting requirements,
- (e) improve FAA's ability to respond to a wide range of DOT, GAO, GSA, and Congressional inquiries, and
- (f) provide a sound point of departure for subsequent Information Resources Management Planning.

b. Approach: Implement the currently designed ADP inventory system to provide the mechanism for storing, maintaining, and accessing the current software and hardware inventory. Develop specifications to modify the current system to provide for storing and maintaining information on software and hardware

plans and software tools to perform planning analyses of the data base.

c. Equipment Requirements and Implications: No special purpose hardware/software will be needed.

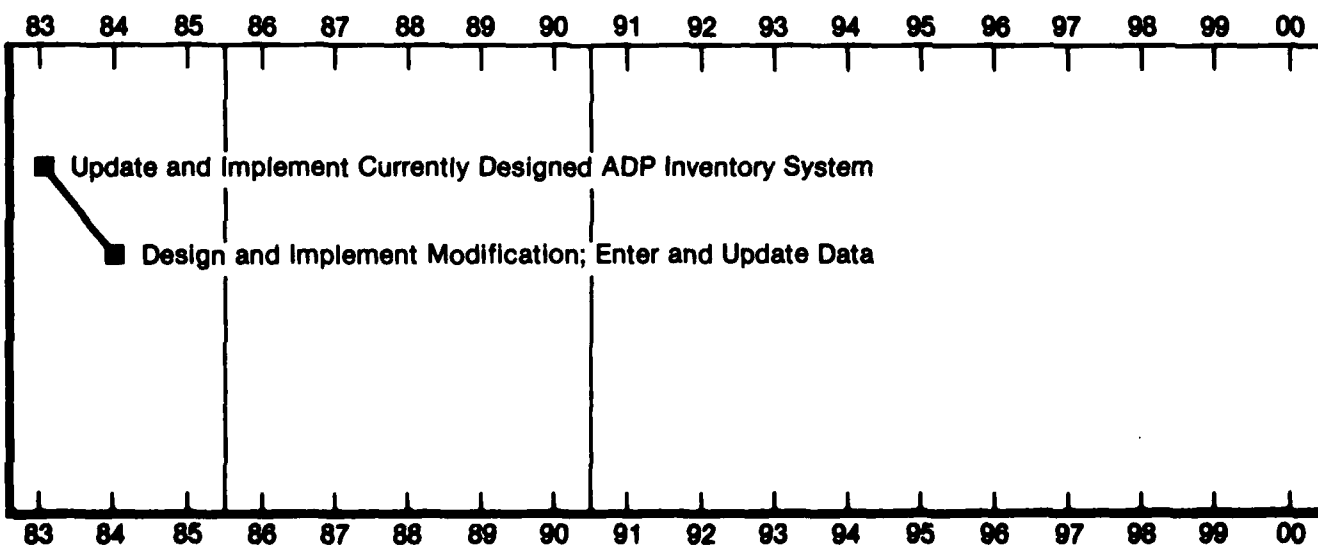
d. Schedule:

- (1) Implement and update the currently designed ADP inventory system covering hardware, applications software, and special purpose/operating software. 1983
- (2) Design and implement the modification needed to accommodate planned applications and hardware within the system. 1984
- (3) Enter and update all planned application and hardware data. 1984

e. Related Projects and Activities: None

f. Costs:*Dollars in Thousands*

- (1) Development costs (based on 1983 dollars) \$163.2
- (2) Annual savings after complete implementation \$139.6

CALENDAR YEAR SCHEDULE

1110. PROJECT: Computer Based Instruction (CBI)

a. Purpose: To provide CBI for the purpose of: (a) significantly reducing travel; (b) providing flexibility in scheduling and training; (c) allowing greater local management control over training schedules and resources; (d) standardizing training course material, depth, and scope; (e) making onsite proficiency/update training more widely available; (f) automating the training assessment, validation, and evaluation process; and (g) fostering improvements in employee productivity.

b. Approach: Establish CBI learning centers where there are large concentrations of Air Traffic, Airway Facilities, and Aviation Standards personnel. Determine optimum configuration to support the Air Traffic Facility Concept of the 1990's.

c. Equipment Requirements and Implications: CBI terminals and CBI proprietary software

d. Schedule:

- (1) Make decisions on the expansion of CBI into the Development and Logistics organization field offices 1983
- (2) Complete interagency agreement with U.S. Army 1983
- (3) Complete installation of approved program 1985
- (4) Implement new technologies to further reduce development and operating costs 1987
- (5) Enhance learning technology for program improvement 1989—1990
- (6) Improve program efficiency/effectiveness using state-of-the-art technology 1996—1997

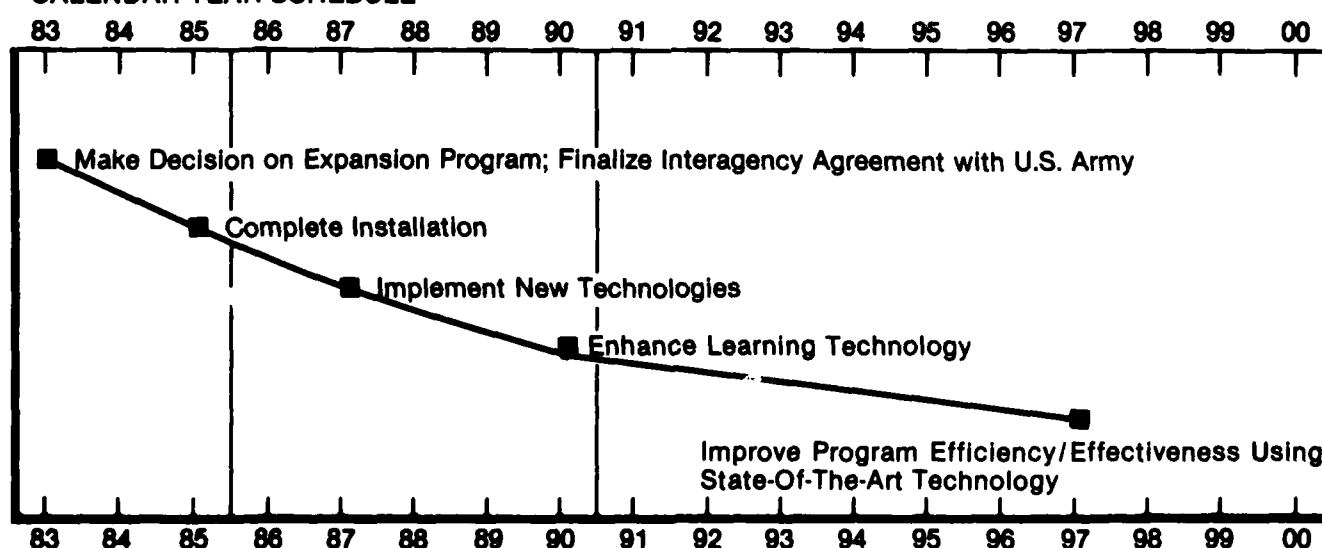
e. Related Projects and Activities: None

f. Costs:

Dollars in Thousands

- (1) Development costs (based on 1983 dollars) \$14,556.6
- (2) Annual savings after complete implementation \$10,499.0

CALENDAR YEAR SCHEDULE



1111. PROJECT: Project Tracking

a. Purpose: To provide FAA with the capability to track large scale to small, short duration projects. Project status is essential in measuring progress toward predetermined goals.

b. Approach: Make a project tracking system available to supplement the one used in the National Airspace System Plan and the Advanced Automation Program. Determine additional off-the-shelf tracking systems for low order needs at Headquarters, regions, centers, and field facilities.

c. Equipment Requirements and Implications:
Proprietary software

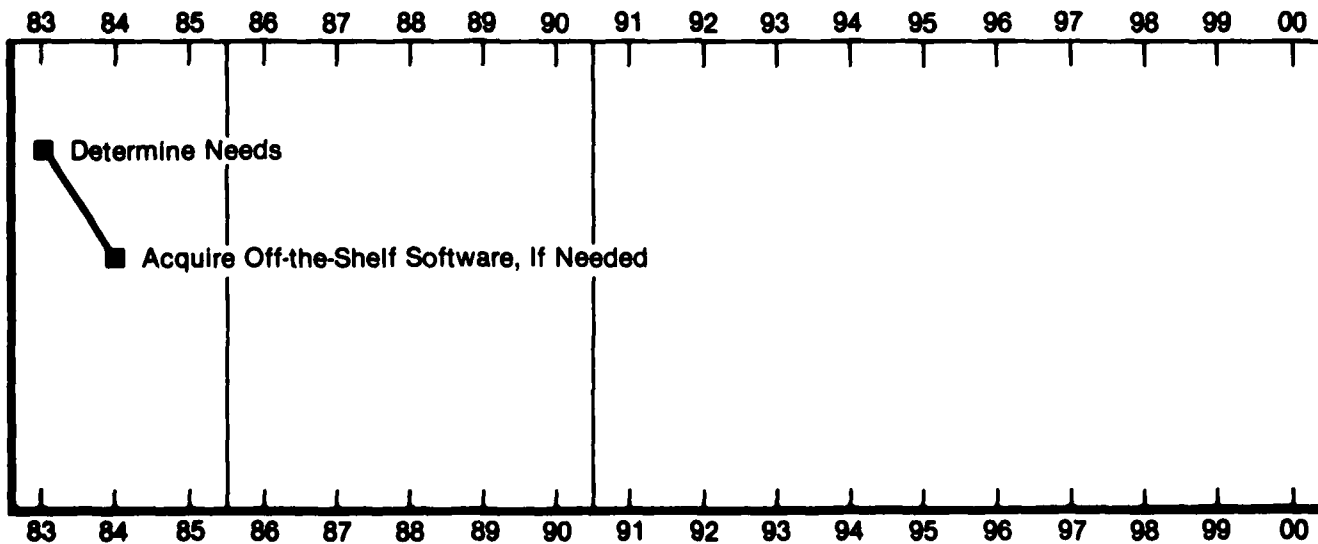
d. Schedule:

- | | |
|---|------|
| (1) Determine low order needs for off-the-shelf project tracking system | 1983 |
| (2) Acquire off-the-shelf software, if needed | 1984 |

e. Related Projects and Activities: NAS Facilities Program Office Program Management System

f. Costs:*Dollars in Thousands*

- | | |
|--|--------|
| (1) Development costs (based on 1983 dollars) | \$60.0 |
| (2) Annual savings after complete implementation | \$18.0 |

CALENDAR YEAR SCHEDULE

1112. PROJECT: Engineering Drawings

a. Purpose: To provide a means for the rapid production, modification, and revision of standardized engineering graphics. This system will (1) alleviate drafting backlog, (2) support the modifications associated with the NAS improvements, (3) reduce normal drafting activities by higher paid engineers, (4) establish administrative control over proposed and recorded drawings, and (5) assure standardization through a uniform drafting system.

b. Approach: Hardware and software will be procured and tested in several regions and Washington Headquarters for computer-aided engineering drawing capability, and later in all regions. An Engineering Drawing Catalog System (EDCS) will be implemented as an online data base system to provide positive control of numbering engineering drawings with filing and retrieval based on multikeyed access.

c. Equipment Requirements and Implications: Graphics processing units, workstations, E-size plotters,

digitizers, disc drives, software packages, graphics terminals, and training slots will be required.

d. Schedule:

(1) Prototype acquisition/use	1983—1986
(2) Full procurement	1985—1986
(3) Airport layouts	1983—1986
(4) Airway Facilities drawings	1983—1986
(5) National standard drawings	1985—1986
(6) EDCS	1983—1985
(7) Adopt industry graphics exchange standard	1989—1991

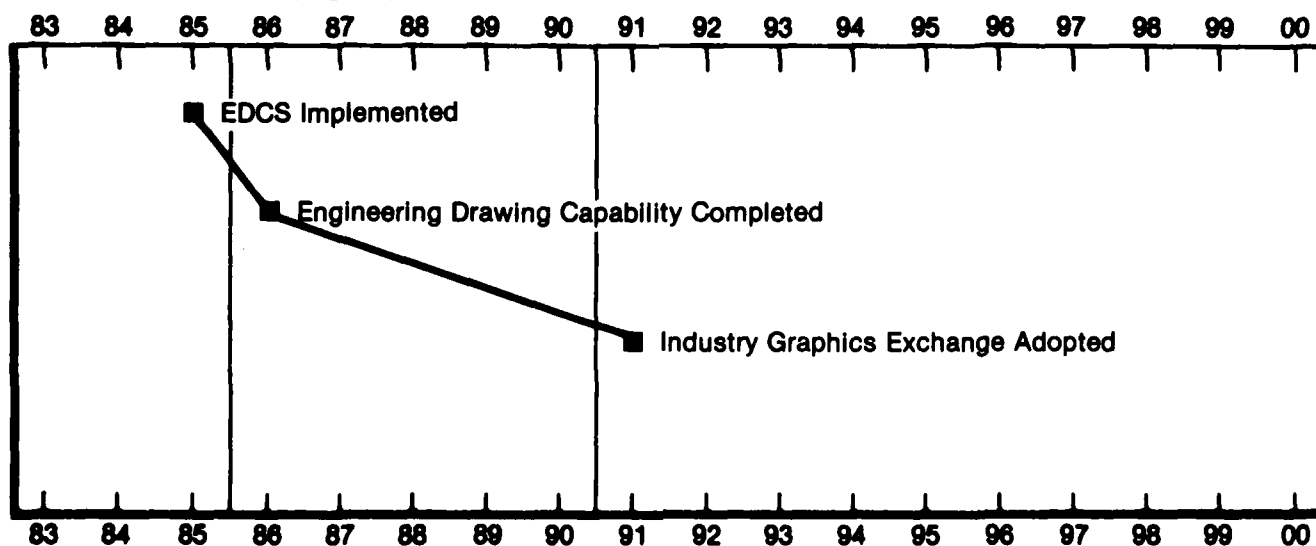
e. Related Projects and Activities: NFIS Configuration Management Data, Studies/Analysis Graphics, and General Graphics

f. Costs:

Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$10,038.1
(2) Annual savings after complete implementation	\$6,830.4

CALENDAR YEAR SCHEDULE



1113. PROJECT: Studies/Analysis Graphics

a. Purpose: To provide for the graphic depiction of potential obstructions to navigable airspace; for using in-house resources for the development of plots depicting radar screening and Remote Communications Air/Ground—VHF Omnidirectional Range (RCAG-VOR) coverage; for the conversion of existing Instrument Approach Procedures Automation (IAPA) device-specific graphics to device-independent graphics; and for graphics of noise modeling and footprints.

b. Approach: Software will be developed to permit graphic plotting of obstructions, given the location of the obstruction, the location of the airport or navigational aid, and the preprogrammed FAR Part 77 and Terminal Instrument Procedures (TERPS) surfaces. A vendor package will be converted to an in-house management information system and interfaced with a graphics system for plotting radar screening/RCAG-VOR coverage. For IAPA graphics, there will be a straight conversion from device-specific to device-independent software. The noise model system is currently available through timesharing with little or no direct plotting/graphic capabilities. The model will be moved to regional management information systems

for increased accessibility by FAA personnel, daily turnaround for multiple-option review, and direct access to the plotting/graphic system for sketches, drawings, and plots.

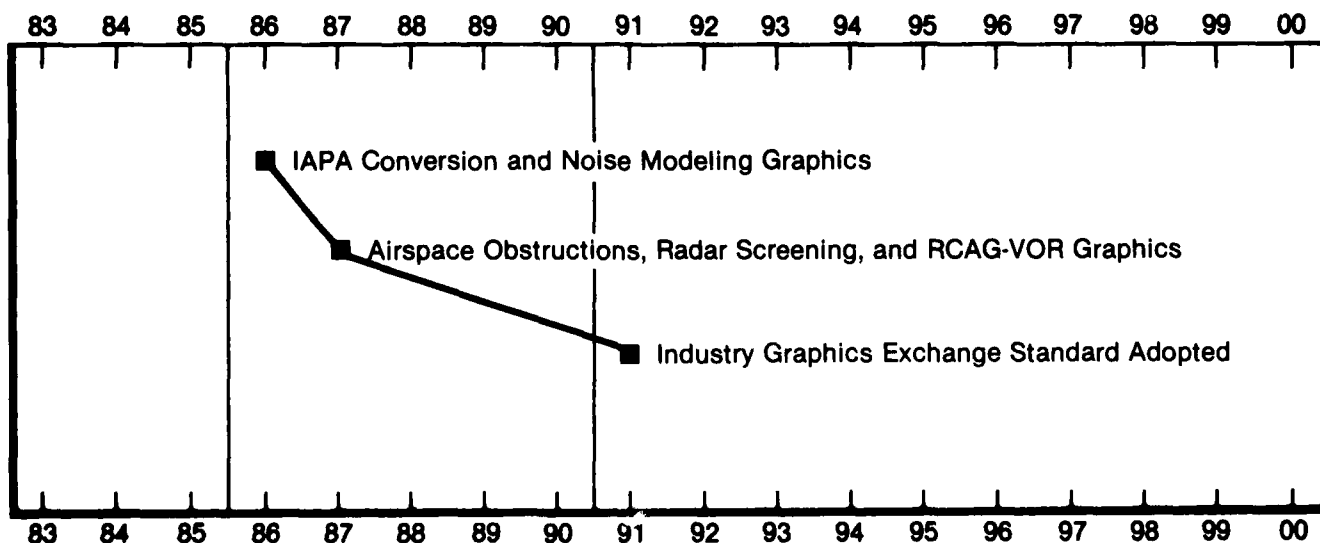
c. Equipment Requirements and Implications: None**d. Schedule:**

(1) Obstruction software/use	1986—1987
(2) Radar screening/RCAG-VOR	1985—1987
(3) IAPA input/output equipment	
conversion to device independence	1984—1986
(4) Noise model in-house and	
graphics capability	1985—1986
(5) Adopt industry graphics	
exchange standard	1989—1991

e. Related Projects and Activities: ATC coverage mapping and communication coverage, Obstruction Evaluation and Airport Airspace Analysis (Project 407), Engineering Drawings, and General Graphics

f. Costs:*Dollars in Thousands*

(1) Development costs (based on 1983 dollars)	\$388.5
(2) Annual savings after complete implementation	\$653.4

CALENDAR YEAR SCHEDULE

1114. PROJECT: General Graphics

a. Purpose:

(1) To procure the Technical Illustration Graphics software package which will allow the writer of advisory circulars, technical manuals, and technical instructional material to produce quality illustrations and scaled diagrams for publication and visual aids;

(2) To develop space layout drawings using computer graphics;

(3) To enhance the functioning of existing FAA National Management Information Systems by providing graphical output of user-selected variables;

(4) To implement a graphics network to permit efficient exchange of graphics materials for FAA management; and

(5) To adopt the yet to be developed industry standard for a common FAA graphics information exchange program to standardize FAA's use.

b. Approach:

(1) Procure the Technical Illustration Graphics software.

(2) Develop space layout drawings for each appropriate facility. Future space requirements and options will be shown as "overlays." The space management procedures and graphics will be standardized so that a system of configuration management can be applied.

(3) Hardcopy graphics output will be implemented in the Aircraft Management Information System (AMIS) and for Semi-Automatic Flight Inspection (SAFI).

(4) Device-independent graphics software will be added to in-house computers to support management information systems.

c. Equipment Requirements and Implications: Space management applications software, Graphics Handling Option (GHO) for an existing laser printer, and graphics terminals will be required.

d. Schedule:

(1) Graphic hardcopy capability	1983—1984
(2) Graphic interactive capability	1984—1986
(3) Space management software/use	1985—1987
(4) Technical illustrations software/use	1987—1988
(5) Implement graphics network	1985—1986
(6) Adopt industry graphics exchange standard	1989—1991

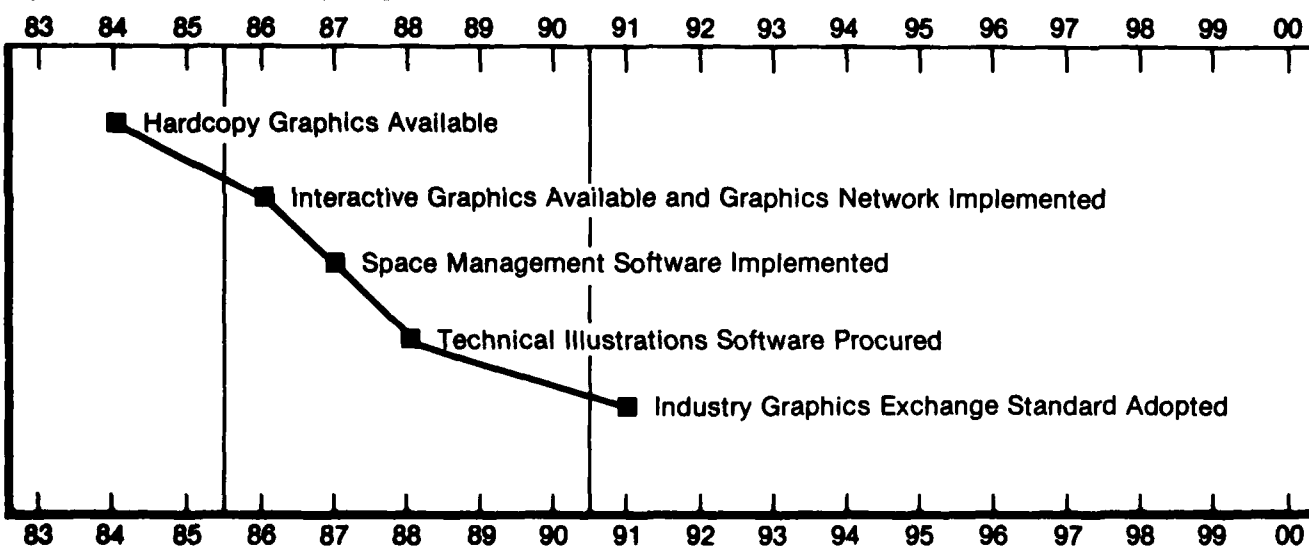
e. Related Projects and Activities: AMIS, SAFI, Engineering Drawings, and Studies/Analysis Graphics

f. Costs:

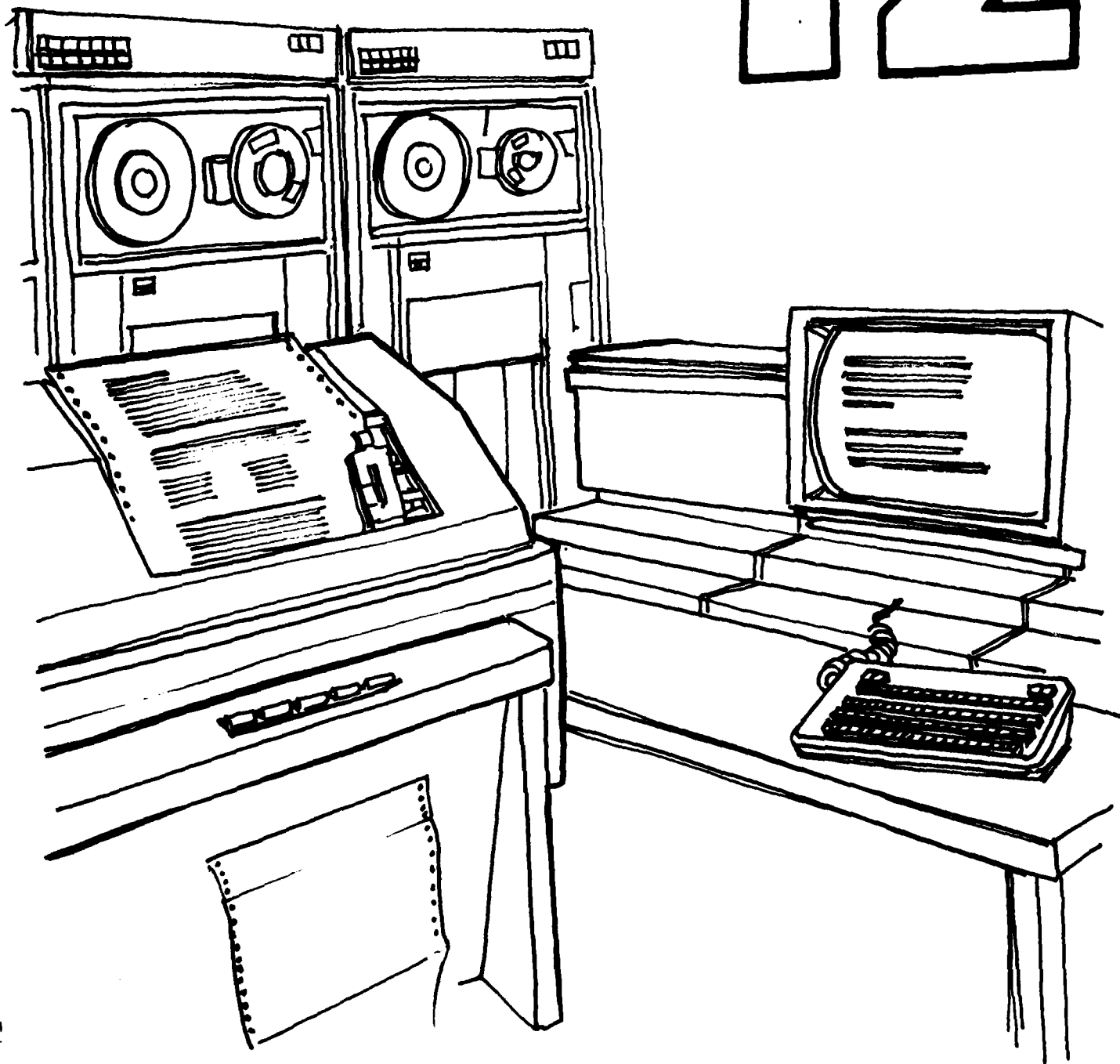
Dollars in Thousands

(1) Development costs (based on 1983 dollars)	\$770.2
(2) Annual savings after complete implementation	\$586.0

CALENDAR YEAR SCHEDULE



12



Information Processing and
Support

Chapter 12. INFORMATION PROCESSING AND SUPPORT

Section 1. GENERAL

1200. THE ROLE OF AUTOMATED DATA PROCESSING (ADP) SUPPORT

a. Concepts for ADP Support. During the past decade, computers have made possible the accomplishment of many things never before deemed feasible. In the FAA, the air traffic control and navigation systems are highly visible examples of the use of computers. Not so visible has been the use of computers in support of administrative and management information systems. This effort is particularly noteworthy because it has been a primary factor in achieving the universal goal of "doing more with fewer people." The basic role of ADP equipment, software, and services is to support information systems and other agency requirements which are more effectively supported with ADP than with manual processes. This role is considered basic to past, present, and future information processing and support within the FAA. Carrying out this role calls for users to be increasingly able to talk with the support system (i.e., data system and computer system) and, in many cases, to get an immediate response from the inquiries. This statement indicates a significant departure from the traditional relationship between the user and the ADP facility. In the past, a user described his requirements to the staff of the ADP facility. In turn, the ADP staff translated the requirements into the language of the computer, gathered the data to be acted upon, scheduled and conducted the machine operation, and sometime later delivered a report to the user. In the future, users will bypass the staff of the ADP facility by dealing directly with the computer. A new breed of information requirements needs a new kind of ADP support. Foremost is the development of information support systems that are user oriented, user designed, user operated, and user controlled. The basic elements of these information systems (i.e., data bases, processes, and physical support) must incorporate the following concepts in their design to assure responsiveness to management requirements and effectiveness in their operation:

(1) Data Bases.

(a) Data are converted to machine readable form as early as possible; i.e., source data automation.

(b) Data elements are entered once and, thereafter, used and reused by anyone who needs them.

(c) Data editing for routine checking, error identification/correction, control and updating is performed by machine as soon as possible after entry and with minimal intervention by people.

(d) Data quality control and its responsibility are located as close as possible to those most knowledgeable about the substance of the information—the generating source.

(2) Processes.

(a) Information derived from multiple sources can be interrogated and accessed as a whole.

(b) Outputs are defined by individual users in a nontechnical language to insure a pertinent response to their particular information requirement.

(c) High flexibility is provided to accommodate changes through the elimination of interdependencies among user language, ADP processes, and data base organization.

(d) Fast turnaround time is provided for both input and output transactions ranging from immediate to overnight responses, as appropriate.

(3) Physical Support.

(a) User operated equipment is available at a point of ready access, usually in the user's office.

(b) The organizational and/or geographic placement of ADP equipment should not affect users of the system.

(c) The technical operation and maintenance of supporting ADP equipment, software, and communication facilities are carried out in a manner that is transparent to the users of the system.

(d) The ADP system, in conjunction with a user control function, guards against the entry of new or revised data from unauthorized sources, the release of privileged information to those not authorized access, and physical disruption of the system.

b. Changes in ADP Support. The role of the ADP facility is to provide a repository for data, translate the requirements of people into the language of machines, operate equipment, and provide overall management and technical control of ADP resources. This role is applicable to past, present, and future support services;

however, the manner in which it is carried out will change. The changes will be more evident in the following areas:

(1) Data entry, to a large extent, will become a function of the users.

(2) Data files will be permanently resident within the computer's large-scale data storage devices.

(3) The computer software will become vastly more complex; the English-oriented language provided to users will be translated by the computer to appropriate computer instructions and operations. The computer will schedule work and recognize priorities as multiple users contend for service.

(4) Overall technical control and operations will change as the newer equipment serves multiple users and multiple jobs at the same time.

(5) The ADP staff will be impacted by a decreasing need for data handlers and an increasing need for higher skill levels in computer and information handling technology.

c. Use and Acquisition of ADP Support Resources. It is the policy of FAA to use and acquire ADP resources for support of agency missions and programs and to do so as effectively and economically as possible. Carrying out the above policy requires considerations and actions in two distinct areas: (1) what ADP services are used for; and (2) how ADP services are provided and distributed.

(1) ADP services are used for support of data systems. Considerations regarding essentiality, type of service needed, and economics of ADP support are made on a case-by-case basis for each data system. The requirements of individual data systems have little impact on the initial scope of agencywide ADP resources. However, in aggregate, they are used to determine the size, capacity, and capability of ADP resources to be provided and the flexibility needed to accommodate an evolving and changing mix of requirements.

(2) Implementing the above policy on an agencywide basis requires particular consideration of how ADP services are provided and distributed. In this respect, it is the agency's position that the best means of carrying out the policy is a strong emphasis on the common use and sharing of general-purpose ADP support resources without regard, except economical, to organizational ownership or placement of these resources. Common use and sharing of ADP resources require a compatible environment. For the purpose of establishing the scope of this plan, the following rules are provided to ascertain compatibility:

(a) Equipment and its support software must be accessible, available, capable, and standardized for general-purpose use in conformance with the Federal Information Processing Standards (FIPS).

(b) Data systems must be supportable by FIPS compatible, general-purpose equipment and software,

and be operated in an environment where access to shared ADP facilities is technically and economically more beneficial than the use of dedicated facilities.

(3) It is recognized that in particular situations a dedicated ADP facility is necessary or may be technically and/or economically more beneficial than a shared ADP facility. Such facilities are usually dedicated to the support of a single application, and seldom is access to the data required from points external to the particular application. Authorization for the acquisition and use of such dedicated facilities will be available when appropriate justification has been made.

1201. PRESENT ENVIRONMENT, PROBLEMS, AND DEFICIENCIES

a. Present Facilities. The agency has used ADP services extensively for a number of years in support of management information and administrative requirements. Because of the firmly established existence of data systems within the organizational structure and the substantial investment in data processing resources, it is prudent to consider these in planning to satisfy future requirements. Agency management information and administrative requirements are supported at the regional offices, two centers, and Headquarters. This is currently accomplished through agency on-site and off-site ADP facilities and augmented by commercial time-sharing services as described below.

(1) **Regional Offices.** Five regional offices (Eastern, Southern, Southwest, Central, and Western-Pacific) provide primary ADP support to all nine regional offices in the conterminous 48 states. These five ADP facilities consist of a Data General MV-8000 computer system. Three regional offices (New England, Great Lakes, and Northwest Mountain) receive their in-house ADP support from adjacent regions. Their ADP facilities consist of a Univac 9300 Remote Batch Terminal and various interactive terminals. The regional office in Alaska provides its own ADP support; their ADP facility consists of a Data General MV-8000 computer system.

(2) **Aeronautical Center (AAC-300).** This is the ADP facility responsible for supporting selected, centralized information systems of the agency. Their ADP facility consists of an IBM 3081, a Data General MV-8000, and a PDP-11/70. The Flight Standards National Field Office (FSNFO), located at the Aeronautical Center, also has a Data General MV-8000 computer.

(3) **Technical Center.** This ADP facility is responsible for providing engineering and scientific support to the Center, as well as associated administrative support services. Their ADP facility consists of a Honeywell 6600 computer for engineering and scientific support and a Data General MV-8000 computer for administrative support. A number of other computers exist at

the Technical Center and are dedicated to particular technical projects.

(4) **Headquarters.** ADP support of FAA Headquarters is provided by the Department of Transportation (DOT) Transportation Computer Center (TCC) which provides ADP support to all Washington, D.C. elements of DOT. However, for support of timesharing, national data systems, and data interchange with the regional offices, the Headquarters facility has a Data General MV-8000, and significant data/word processing capability is provided through a WANG system.

(5) **Remote Field Facilities.** These are computer terminals and micro/minicomputers that are dedicated to the support of a particular application as performed in a small entity of the agency. Differing from the following category of autonomous facilities, these facilities generally include the entering of data that eventually will be stored and accessed by organizational elements at various levels throughout the agency. The remote field facilities presently include about 170 Burroughs word processing computers used at Flight Standards Field Offices; about 24 Tandem computers used for the monitoring of several hundred remote, unmanned radar and navigation facilities to sense equipment failures; and about 127 Compustar computers for gathering data regarding the performance of all equipment used in the National Airspace System.

(6) **Autonomous Facilities.** These ADP facilities are dedicated to the support of a single application, and seldom is access to the data required from points external to the particular application. These facilities include the Honeywell computer at the Technical Center which is dedicated to local research, development, testing, and engineering applications; specific computers at the Civil Aeromedical Institute which are dedicated to scientific projects; the computers installed in FAA airplanes for the aerial inspection of air traffic control and navigation systems; and particular computers used for generating the graphics associated with instrument landing approach procedures.

(7) **Timesharing Services.** Both interactive and batch services are extensively used by the regional offices, two centers, and Headquarters in support of a broad variety of localized and agencywide applications. These services are primarily acquired from about 10 commercial timesharing vendors. Additionally, services are acquired on an interservices basis from about six federal agencies.

b. Problems and Deficiencies. The problem with the present ADP support posture is the lack of flexibility and technical capability to provide information interchange throughout the agency. This situation occurs because equipment is basically provided at organizational and geographic points in consonance with agency requirements for information storage. As agency requirements for information evolve to needing faster and broader access, the present computers cannot freely interchange data with "foreign" computers. This is

mainly the result of having nonstandardized ADP equipment, software, and telecommunications which comprise the agency's information processing and support posture.

1202. TRENDS OF THE FUTURE

a. Present Base. The agency acquired the Data General MV-8000 and IBM 3081 computers in FY-1982, with installation and operation of the equipment in FY-1983. Utilizing an 8-year life cycle for the equipment, the next major replacement of large processors should occur in FY-1991. The present configuration of hardware was determined to be cost effective and efficient based on the technology existing during the period of procurement. It is anticipated that this configuration will be viable throughout its life cycle by upgrading the equipment when needed. No additional computing sites are anticipated.

b. Technology Improvements. The largest challenge before the agency is how to capitalize on technological improvements and cost reductions in a manner that will permit the most economical and efficient operations in the future. The dramatic advances in both hardware and telecommunications technology are causing rapid changes and transitions in the data processing field. The following is a brief summary of some of the most significant technological trends that bear heavily on FAA's plans:

(1) Data processing hardware is becoming smaller, less expensive, faster, and more reliable.

(2) Large computer system software costs are increasing, but the software for such systems is becoming more reliable and more efficient.

(3) Small computers operating in a decentralized mode are becoming capable of processing greater volumes and are becoming easier to operate.

(4) Price/performance improvements are occurring more rapidly for smaller, decentralized systems, because their system software costs and operating overheads are much less than those of large computer systems.

(5) The ability to communicate with compatible equipment is becoming a more common device feature.

(6) Data transmission is becoming faster and more efficient.

(7) The currently separate technology associated with data networks and voice networks is evolving towards the integration of the two into a single network.

(8) Personal computers are appearing in growing numbers as they offer significant price/performance benefits for noncomplex applications.

(9) The merging of computer technology and office devices is increasing the capabilities of office automation systems.

There is every indication that the trends for more powerful computers, higher storage capacities, and increased data communication will continue. Improved price/performance ratios and ease of use features

offered by these technological developments are making reliance on automated systems increasingly more attractive. Continued price/performance ratio improvements will be an important factor in determining which configuration best suits FAA's future requirements.

1203. LONG TERM GOALS

It was previously stated that all information systems shall become user oriented; i.e., user designed, user operated, and user controlled (within a framework of management overview). Accordingly, the ADP equipment, software, and communication facilities that support the information systems must ultimately be able to provide pertinent information, whenever and wherever it is needed, and to do so as effectively and economically as possible. To do this, the following goals must be attained:

- a. User operated equipment shall be placed at a point of ready access, usually in the user's office.
- b. The organizational and/or geographic placement of ADP equipment shall not affect users of the systems.
- c. The technical operation and maintenance of supporting ADP equipment shall be carried out in a manner that is transparent to the users of information systems.
- d. All user and technical use of ADP equipment, software, and communication resources shall be in conformance with appropriate Federal regulations and FAA policies, standards, and procedures.
- e. ADP equipment, software, and communication facilities shall be given appropriate security to guard against unauthorized access, use, and physical hazards.
- f. All ADP equipment, software, and communication facilities acquired by FAA shall be in conformance with standards that assure full and free interchangeability of data.
- g. The ADP equipment, software, and communication facilities provided to support agency information requirements within the scope of this IRMP shall be used for all applications. Exceptions shall be made only for truly unique requirements such as the use of proprietary processes, special graphic systems, audio response capabilities, etc., for which commercial timesharing or dedicated equipment may be authorized.

1204. SYSTEM EVOLUTION

a. **Near Term (To 1985).** The present ADP equipment at the regional offices, centers, and Headquarters have a useful life until about 1990. Therefore, they will continue to be operated and maintained on a status quo basis. As new data systems are implemented or user requirements increase, additional user terminals, data storage devices, and other enhancements may be added to present ADP

configurations. During the near term, efforts will be concentrated on identifying and acquiring system software that will enhance user orientation of present resources and improve the interchange of data. The most significant activity will be to accommodate the merging technology of office automation and data processing, as well as to intelligently adopt the advantages of the microcomputer. Foremost will be a project to identify a set of standards with which to govern future software, hardware and communications procurement in order to promote compatibility by yet not to sacrifice the benefits of competitive procurements.

b. **Intermediate Term (To 1990).** This period will be marked by the adjustments required to accommodate the targeted computer configuration for FY-1991 and the significant automation of field facilities. The transition to the centralized configuration of FY-1991 will be characterized by the increased role that the microprocessors will assume as the minicomputers are gradually phased down for replacement. Software applications will need to be modified to utilize the large host/micro configuration in lieu of the intermediate large host/mini/micro configuration.

c. **Long Term (To 2000).** Replacement of existing, large CPU's will occur in FY-1991 and FY-1999 as the life cycle expires for the installed equipment. The heavy introduction of automation to field facilities in the 1980's will stabilize during this period, and a replacement program of approximately 20% per year of installed micros and terminals will occur as the equipment matures under a five year life cycle.

1205. SYSTEM COSTS

Table 12.1 COST SUMMARY FOR FY 1983-2000
(In millions of discounted FY 1983 dollars)

Hardware/software costs	104.7
Other costs (terminals)	36.0
Subtotal	140.7
Communication costs	53.3
Total	194.0

1206. SUMMARY OF CHANGES

a. **Present ADP Support Posture.** The present ADP facilities at the regions, centers, and Headquarters will provide the basic ADP support posture through 1990. The changes that will occur during this time will be the completion of projects that, in most cases, are already in progress. Specifically, this will be the completion of the conversion to the Data General MV-8000 computer.

Also, there will be some upgrading of these computers to accommodate additional terminal and data storage requirements imposed by new information systems.

b. Introduction/Implementation of Micros. A series of projects will be initiated to introduce the use of highly intelligent user terminals (with integrated micro/macro processing capabilities). These projects will include the establishment of standards for the acquisition and use of micros, the prototyping of micro facilities, and the conversion of information systems from the regional Data General computer to a network of micros communicating with designated, large, central computers. Concurrent with the conversion to the micro network will be several projects for upgrading the centralized computer capabilities of the agency. Such a conversion

is expected to replace the present centralized facilities at the Aeronautical Center, the Transportation Computer Center, and various commercial timesharing firms with two facilities, located at existing sites. Such a configuration will provide an optimum mix of effectiveness and economy for supporting the total information requirements of the agency.

c. Next Generation ADP Support. The data processing and data communication equipment phased in during the 1990—1998 period will have to be replaced after approximately eight years. This situation is a result of both technological and physical attrition. Projects during this time will deal with the technical upgrading and replenishment of the agencywide ADP support posture.

Section 2. PROJECTS SUMMARY

**TABLE 12.2 PROJECT NAMES, SCHEDULES, AND
OFFICE OF PRIMARY RESPONSIBILITY (OPR)**

<i>Projects</i>	<i>Start</i>	<i>Completion</i>	<i>OPR</i>
PRESENT ADP SUPPORT POSTURE			
Conversion to Data General Computers	1982	1984	AMS
MICRO-ORIENTED ADP SUPPORT POSTURE			
Standards for Acquisition and Use of Microprocessors	1983	1983	AMS
Establish Microprocessor Prototype Facility	1983	1984	AMS
Build-up of Centralized ADP and Communication Facilities to Support Microprocessors	1984	1998	AMS
Conversion from Data General to Microprocessor Facilities	1984	1990	AMS
Phase-out of Data General and Associated ADP Facilities	1990	1990	AMS
NEXT GENERATION ADP SUPPORT POSTURE			
Replenishment of Microprocessor Facilities	1989	1999	AMS
Replenishment of Centralized Processing, Data Storage, and Communications Facilities	1999	—	AMS

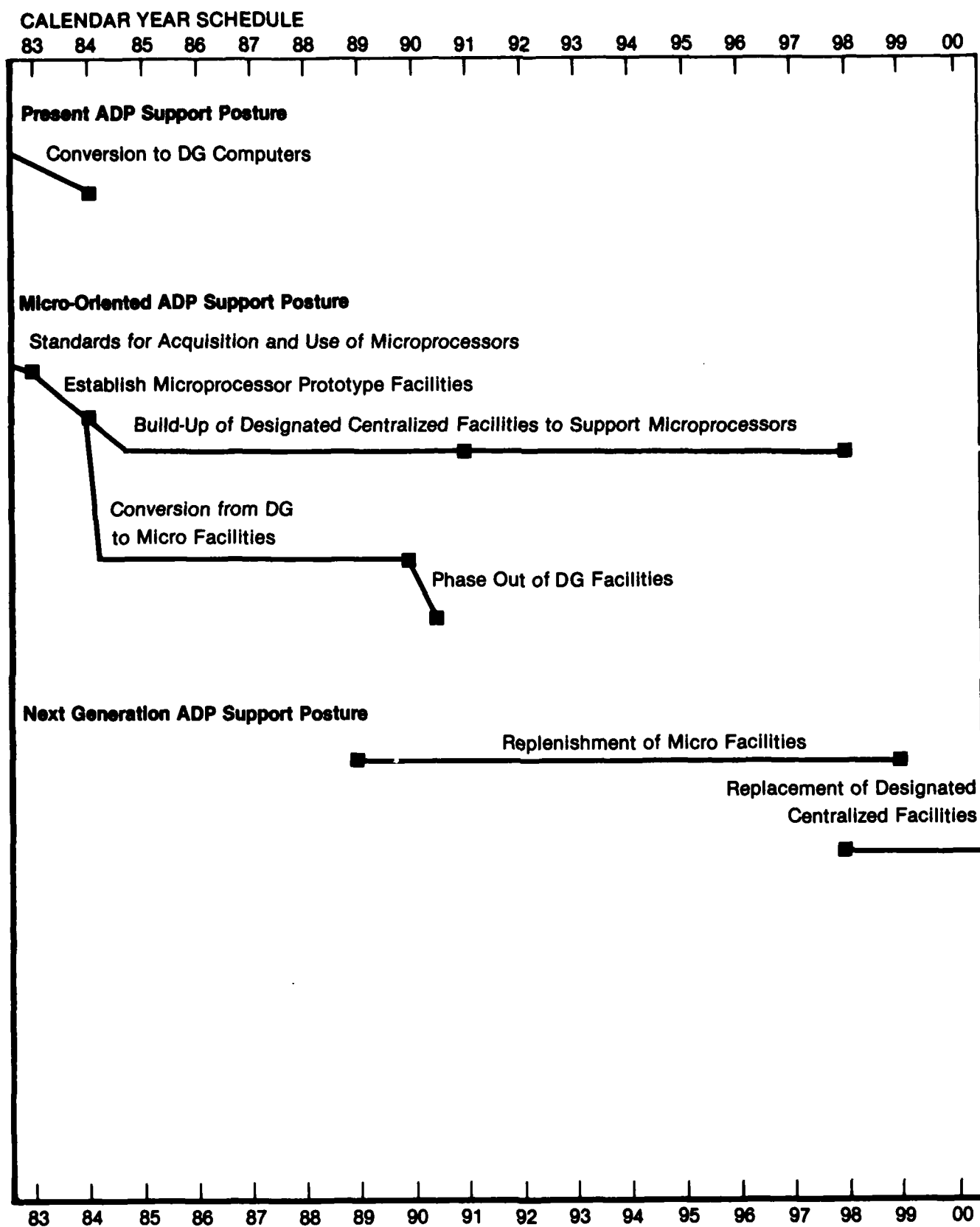


FIGURE 12.1 PROJECTS EVOLUTION

Section 3. SPECIFIC PROJECTS

1207. PROJECT: Conversion to Data General Computers

a. Purpose: To fully utilize the replacement equipment in the regions and then release the old equipment.

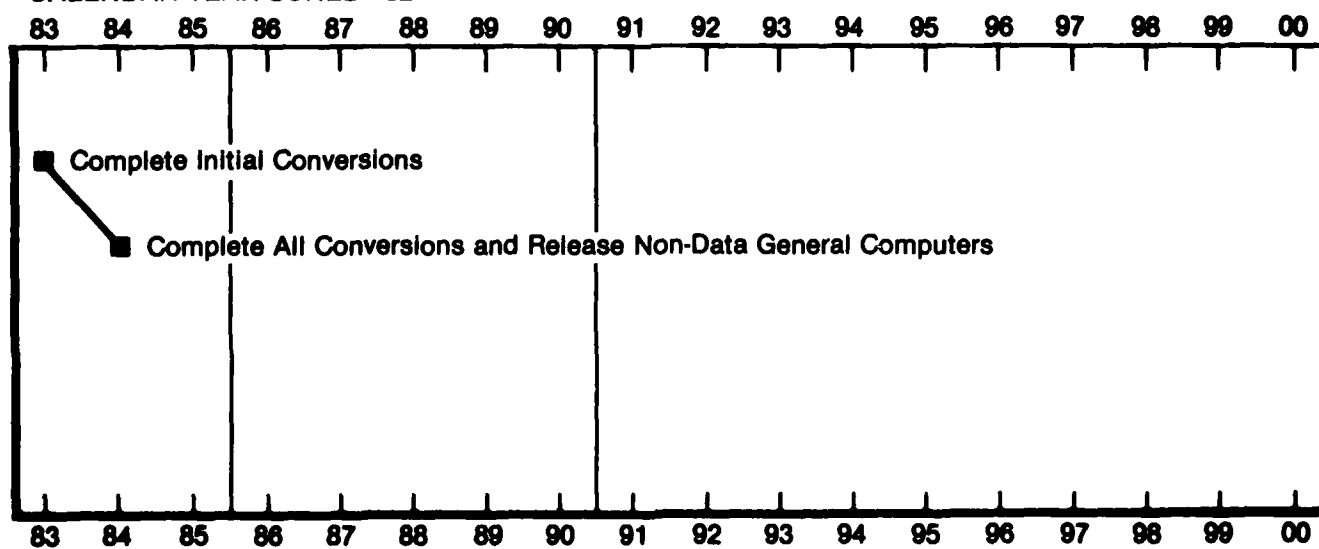
b. Approach: For most local systems, an initial program conversion was made from the old equipment to the replacement Data General computers. For national systems, many of the systems are being redesigned and the new version will replace the old version.

c. Schedule:

- | | |
|--|------|
| (1) Complete initial conversions | 1983 |
| (2) Complete all conversions | 1984 |
| (3) Release non-Data General computers | 1984 |

d. Related Projects and Activities: Development and implementation of new information systems which are dependent on the Data General computers and are identified in this Plan.

CALENDAR YEAR SCHEDULE



1208. PROJECT: Standards for Acquisition and Use of Microprocessors

a. Purpose: To assure free interchange of data among the various ADP and communication equipment comprising the agency's ADP support network.

b. Approach: Determine on a long range basis the data communication protocols and procedures that FAA will use; then, establish standards for acquisition and use of

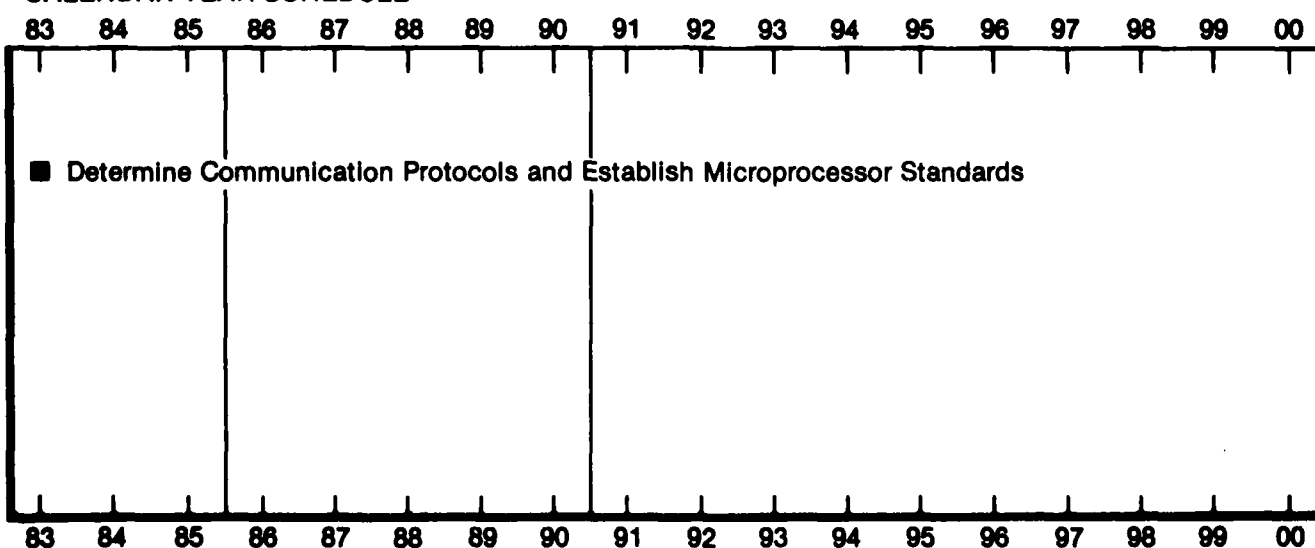
all supporting equipment that will assure necessary technical compatibility.

c. Schedule:

- (1) Determine communication protocols 1983
- (2) Establish microprocessor standards 1983

d. Related Projects and Activities: Design of a long-lasting data communications facility that will be responsive to the agency's needs to 1999.

CALENDAR YEAR SCHEDULE



1209. PROJECT: Establish a Microprocessor Prototype Facility

a. Purpose: To establish a test bed to acquire knowledge and validate the technical and performance characteristics of microprocessors prior to a large scale acquisition effort.

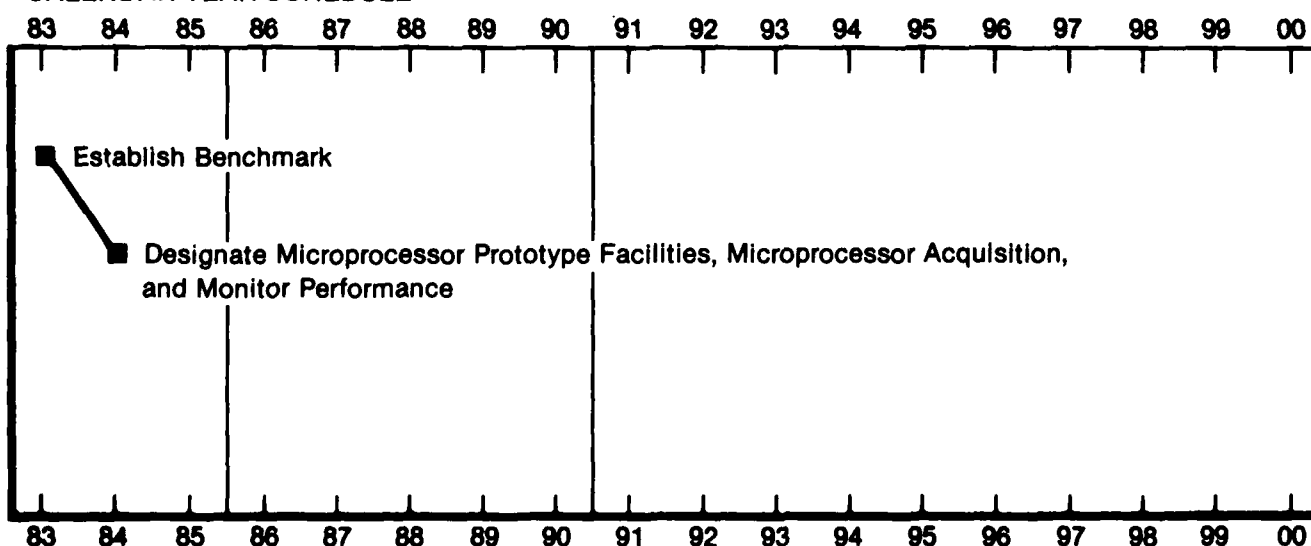
b. Approach: Establish a facility that can benchmark and otherwise measure the impact that a particular microprocessor will have on the various elements of the agencywide ADP support network. Designate one or more of the new information systems development efforts to be monitored for overall technical performance and impact.

c. Schedule:

- | | |
|--|------|
| (1) Establish a benchmark/performance measurement capability for microprocessors | 1983 |
| (2) Designate microprocessor prototyping facilities | 1984 |
| (3) Carryout microprocessor acquisition and monitor performance | 1984 |

d. Related Projects and Activities: Directly tied to the build-up of designated centralized ADP and communication facilities to which the microprocessors must be connected.

CALENDAR YEAR SCHEDULE



1210. PROJECT: Build-Up of Centralized ADP and Communications Facilities to Support Microprocessors

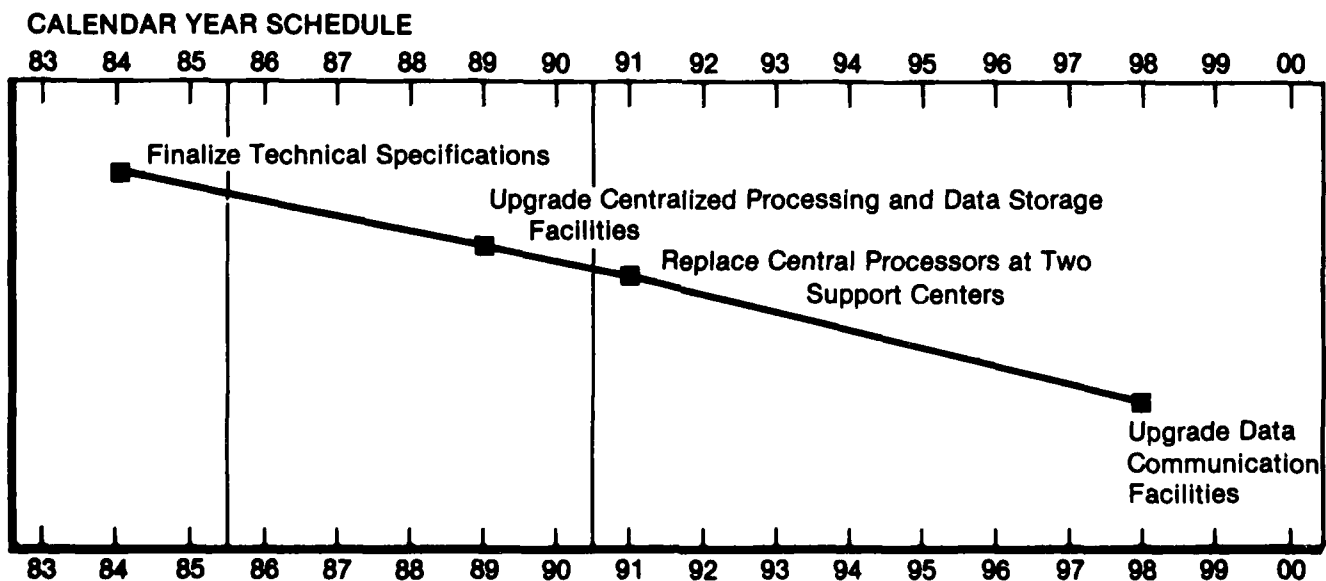
a. Purpose: The technical limitations of microprocessors and the agency needs for information interchange require that they be extensively supported by centralized processors, data repositories, and communication facilities.

b. Approach: Upon finalization of a technical plan for the operation and distribution of ADP support services for the agency, expand/modify the designated central processing and communications facilities to appropriately support the microprocessor facilities.

c. Schedule:

- (1) Finalize technical specifications for centralized processing and communications support 1984
- (2) Upgrade centralized processing and data storage facilities 1985—1989
- (3) Upgrade data communication facilities 1985—1998
- (4) Replace central processors at two support centers with compatible processors, peripherals, and communications facilities 1991

d. Related Projects and Activities: This project is directly tied to the establishment of standards for the acquisition and use of microprocessors.



1211. PROJECT: Conversion from Data General to Microprocessor Facilities

a. Purpose: To implement this Plan and provide more effective and economical ADP support services throughout the agency.

b. Approach: As the use of microprocessors involves a systems approach and equipment technology that is substantially different from the present Data General computers, all information systems will have to be redesigned/reprogrammed to use microprocessors. This

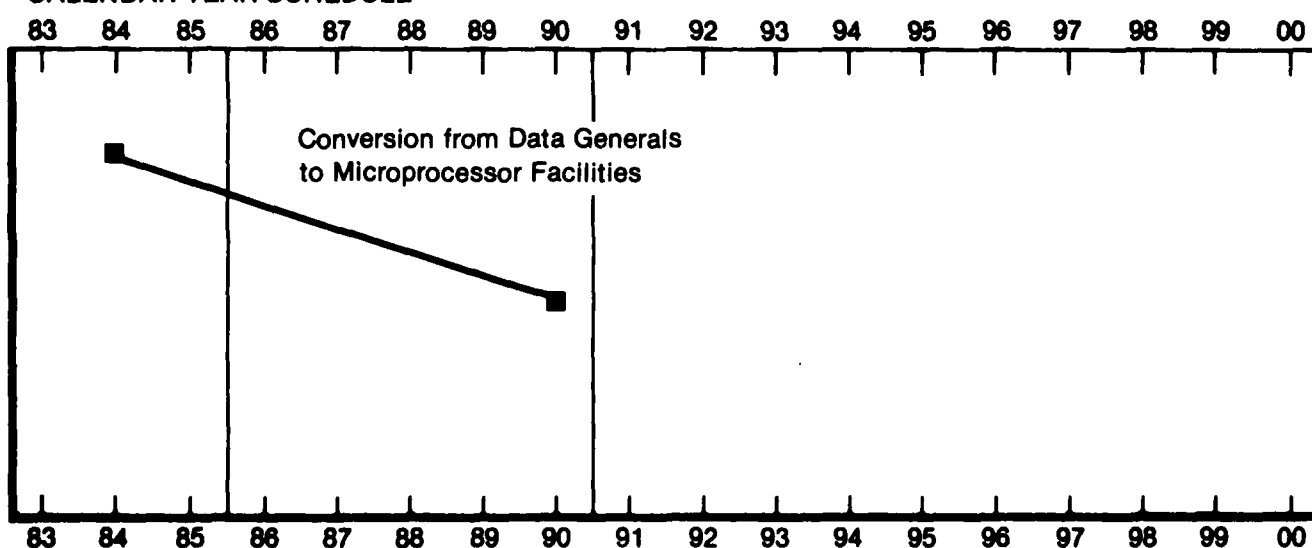
will be accomplished via the information systems designated in this plan.

c. Schedule:

(Per designated Information Systems) 1984—1990

d. Related Projects and Activities: For each national system supported by microprocessors, it will be necessary to provide supporting resources at the designated centralized facilities and within the data communications network.

CALENDAR YEAR SCHEDULE



1212. PROJECT: Phase-Out of Data General and Associated ADP Facilities

a. Purpose: To release predecessor equipment, thus reducing costs as replacement equipment is implemented.

b. Approach: As information systems are implemented on the host micro network, the Data General computers will be bypassed. When the cumulative effect of such

bypassing produces insignificant utilization, the Data General computers will be released.

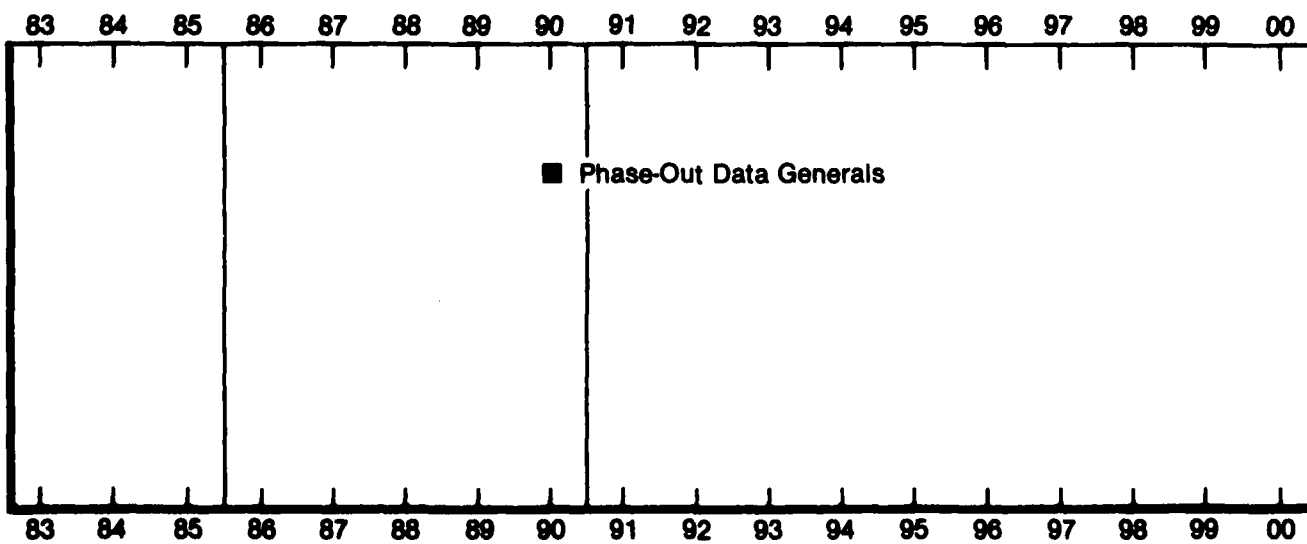
c. Schedule:

Phase-out Data General computers

1990

d. Related Projects and Activities: All activities related to the full implementation of the host microprocessor facilities.

CALENDAR YEAR SCHEDULE



1213. PROJECT: Replenishment of Microprocessor Facilities

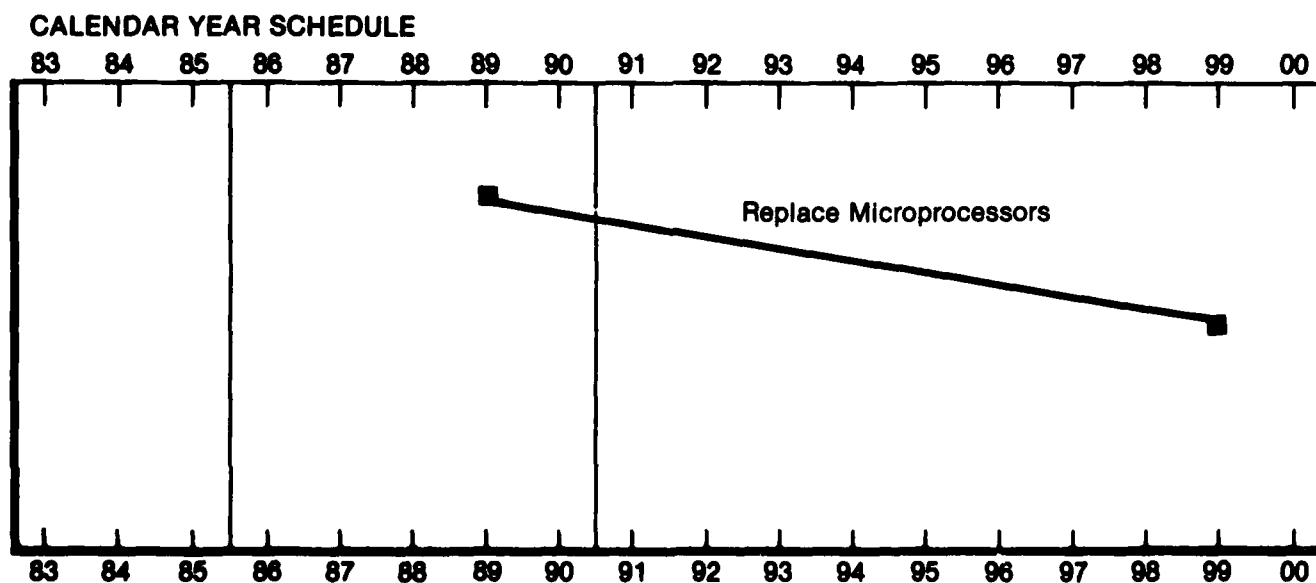
a. Purpose: To replace microprocessors as a result of physical, economical, and technological attrition.

b. Approach: Replace national groups of equipment as particular information systems are redesigned.

c. Schedule:

- | | |
|---------------------------------|------|
| (1) First set replaced | 1989 |
| (2) Other sets replaced through | 1999 |

d. Related Projects and Activities: Replacement of centralized processing, data storage, and communication facilities.



1214. PROJECT: Replacement of Centralized Processing, Data Storage, and Communications Facilities

a. Purpose: To replace centralized host facilities as a result of physical, economical, and technological attrition.

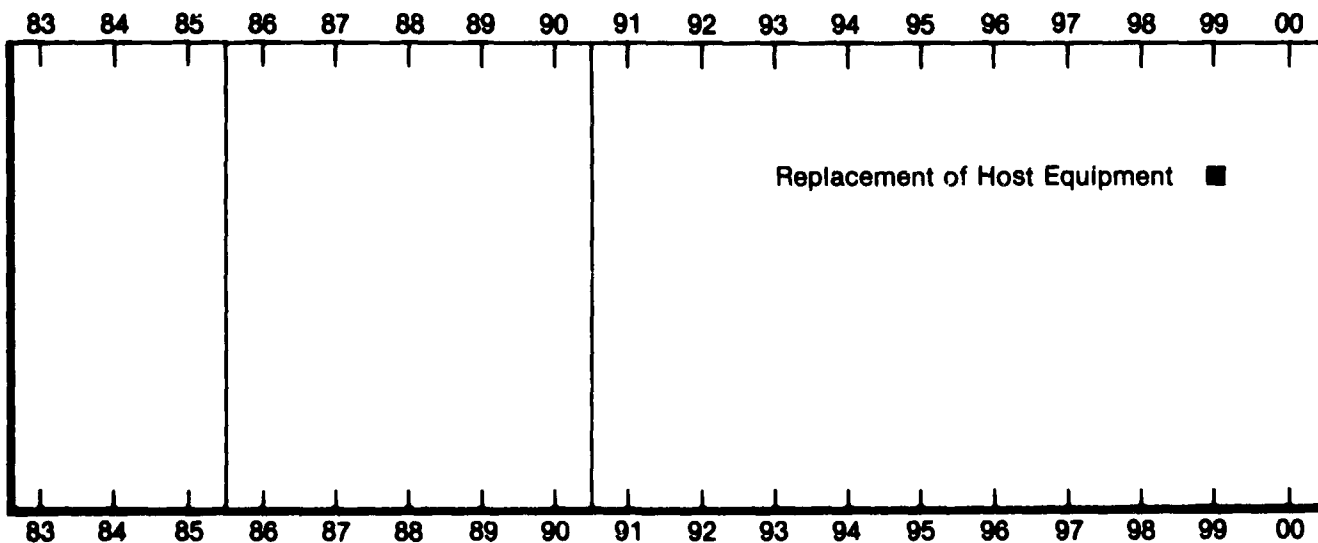
b. Approach: Replace particular sets of host equipment as justified.

c. Schedule:

(1) Replacement of host equipment 1999

d. Related Activities: Replenishment of microprocessor facilities.

CALENDAR YEAR SCHEDULE



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INFORMATION RESOURCES MANAGEMENT PLAN(U) FEDERAL
AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
MANAGEMENT SYSTEMS AUG 83

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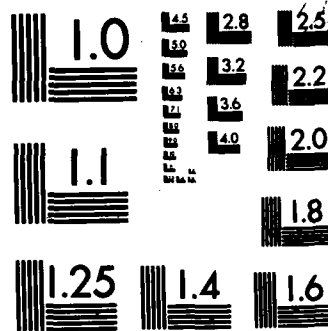
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END

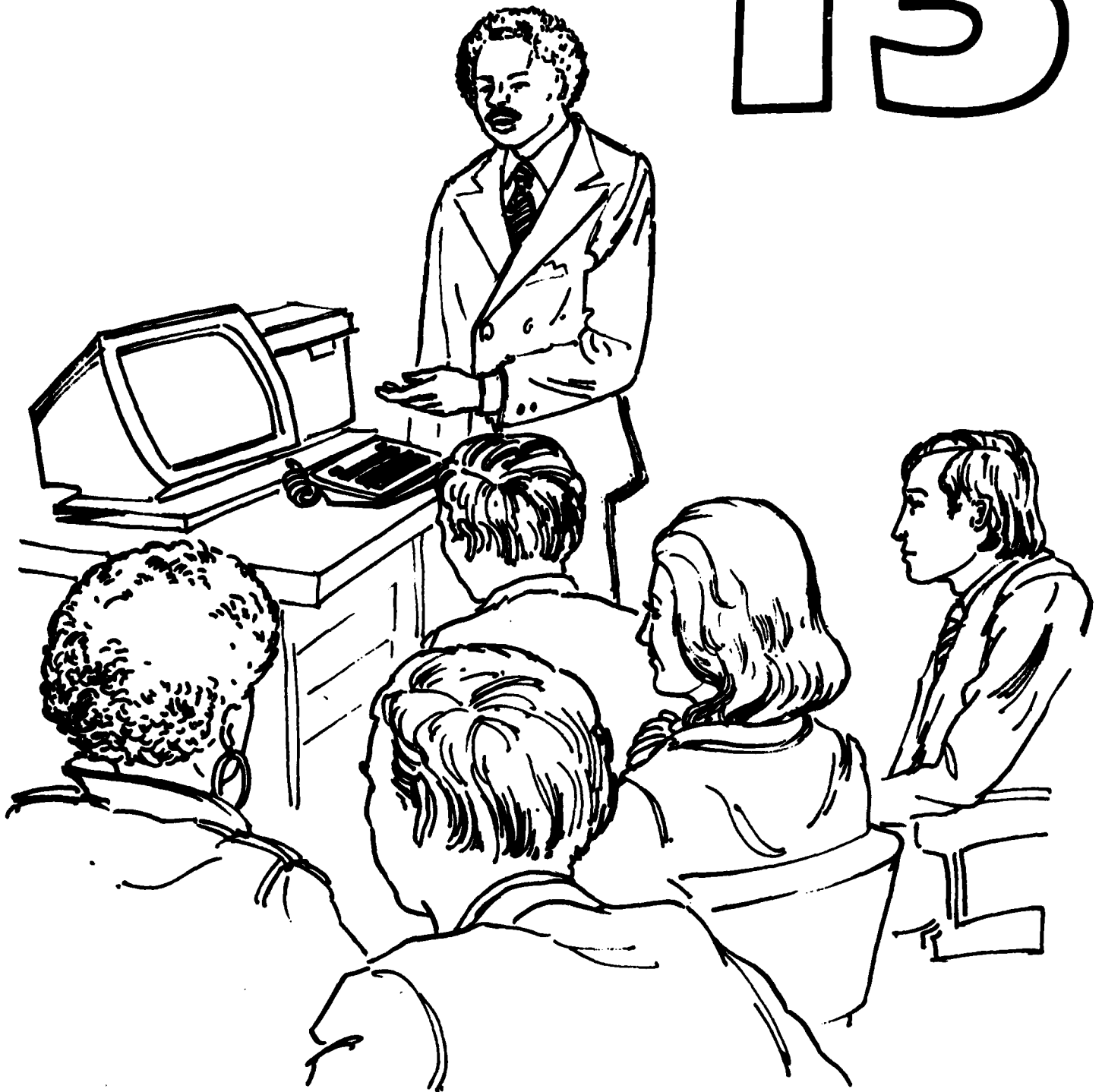
FM WEL

BTB



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

13



Human Interface and Training

Chapter 13. HUMAN INTERFACE AND TRAINING

Section 1. GENERAL

1300. THE FUTURE WORK ENVIRONMENT

a. The preceding chapters in this plan represent change in the work environment of every employee—managers and their co-workers. The automation efforts outlined in the plan will bring automation to practically all parts of the agency. In the future, the management and administrative operations of the FAA will be modernized in parallel with the National Airspace System (NAS) modernization program. Much of the management modernization is needed to support the NAS modernization, as well as to increase the productivity of other operations.

b. It is anticipated that virtually every FAA employee will be working with a computer or through terminals in the next 10 years. Microcomputers, terminals of various types, printers, and telecommunications devices will become a part of almost every office and manned facility. The ability to use these devices will be an important element in each employee's continued productivity.

c. The management challenge facing FAA is to guide and motivate FAA's personnel so that this major transition is accomplished while maintaining every person's interest in hard work and dedication to making the system work. The key elements in accomplishing this are keeping FAA's employees informed of the changes that are coming, showing them how they can benefit from these changes, and letting them know how they can prepare themselves to fully participate in the future work environment. This chapter presents the plans for agency sponsored training which will fill part of the need. These plans must be supported by a commitment of FAA's employees to invest their time and energy both within the FAA training framework and their own learning initiatives.

1301. HUMAN RELATIONS AND TRAINING ROLES, GOALS, AND POLICIES

a. With respect to FAA's employees, management should:

(1) Keep employees fully informed of future plans for changing work life through automation.

(2) Provide employees with opportunities to contribute to planning for transition and change.

(3) Communicate the benefits of automation to each employee's ability to be more productive and effective.

(4) Describe for each employee the skills and training that will be needed to successfully perform in the new environment.

(5) Show each employee how the necessary skills and training can be acquired through the joint efforts of the employee and FAA.

(6) Help employees identify ways in which new skills and experiences can contribute to employee growth along new or revised career paths.

b. With respect to their organizations, employees should:

(1) Keep abreast of automation plans and related opportunities to acquire new skills and training.

(2) Help management and automation specialists identify opportunities for management improvement through automation and planning for change.

(3) Contribute their time and energy to preparing themselves for the changing work environment.

c. With respect to computer and automation related training programs, the ADP management organization should:

(1) Identify the skills and knowledge required for the various ADP user groups within FAA.

(2) Work with the training organization to define the courses and course materials required to provide the skills and knowledge.

(3) Locate sources for the technical training needed by FAA automation specialists.

(4) Evaluate the effectiveness of training obtained through the FAA and through individual initiatives.

d. With respect to computer and automation related training programs, the training organization should meet the training requirements through:

(1) Locating out-of-agency training available to FAA employees.

(2) Developing appropriate courses and course revisions to institutionalize the various kinds and levels of training as a part of the normal management and staff training of FAA employees.

e. With respect to ADP application training, application system development project managers should:

(1) Identify the specific needs for training and orientation related to the specific application under development or revision.

(2) Incorporate the development, acquisition, and delivery of needed training and orientation as a major task for the successful completion of their projects.

1302. OVERVIEW OF APPROACH TO AUTOMATION TRAINING

While virtually all FAA employees will be interacting with automated systems in the next few years, their involvement with automation will differ. FAA people affected by administrative and management automation will need different types of training. More specifically:

a. Basic familiarization training, sometimes called "computer literacy training," will be needed by almost everyone who has not been exposed to automation through educational or work experiences. Increasingly, this kind of training can be obtained in community colleges and other adult education programs.

b. Managerial and supervisory information resources training will become a part of FAA's management training program. It will focus on the management and use of automation tools and systems. In some cases, it will need to be supplemented by more detailed training in information resources and system management procedures and techniques.

c. ADP application system training will be needed by everyone involved in operating and using new or revised application systems. This training will be a normal part of the implementation of new or revised systems. It will vary in depth, depending upon the nature of the new or revised system.

d. Technical ADP training will be needed by everyone involved in the actual management and operation of the

system of equipment, software, and communications that support the application systems. Many times equipment and software vendors are the only sources of this training. However, there are times when local educational institutions can meet this need.

e. Decision support system training is needed by the many managers and analysts in FAA who work directly with FAA's data resources to support their work through the use of modeling and simulation techniques, statistical report generation, etc. These skills and knowledges are covered in computer and information science course work frequently offered by most colleges and universities—often at night and on weekends. Other government agencies also present relevant courses.

1303. RETURN ON THE INVESTMENT

The investment of agency and individual resources and time is necessary in order for the agency to realize fully the benefits of all other work covered by this plan and for the individual to be able to fully develop and realize his or her potential as a member of the team. Management involvement and individual enthusiasm will increase managerial effectiveness and individual performance. With active participation by all parties, the FAA can achieve the great gains in productivity and effectiveness that automation offers.

TABLE 13.1 SUMMARY OF COSTS
(Dollars in Millions)

	1983	1985	1990	2000
Cumulative Project Costs	0.2	2.4	7.5	15.7
Discounted Cumulative Project Costs	0.2	2.1	5.3	7.9

Section 2. TRAINING PROGRAM SUMMARY

Table 13.2 TRAINING PROGRAM SUMMARY

<i>Type of Course</i>	<i>Number of Students*</i>		<i>Course Length (Days)</i>
	<i>Total</i>	<i>Annual</i>	
(1) ADP Familiarization (Computer Literacy)	25,000	1,000	1
(2) Information Resources Training for Managers and Supervisors	2,500	500	1 * *
(3) ADP Application System Training	10,000	2,500	5
(4) ADP Technical Training	200	200	5 * * *
(5) Decision Support System Training	2,500	100	5

* Total student figures represent the number of agency employees that should have the course or its equivalent. The annual number is the number that is estimated as needing the training in a normal year.

* * Course length would be somewhat variable, depending upon the specific audience.

* * * Each student will receive two courses.

Section 3. SPECIFIC COURSES

1304. COURSE TYPE: ADP Familiarization (Computer Literacy)

- a. **Purpose:** To provide a basic understanding of the general concepts of information processing with an emphasis on microcomputers. The course presents a "computer literacy" base on which to build further automation knowledge. The human interface and acceptance of automation is stressed:
- b. **Audience:** General audience—managers, analysts, technicians, secretaries, and clerks
- c. **Total Number of Students That Should Have the Course:** 25,000
- d. **Estimated Annual Number Trained:** 3500 per year for the first years; 1000 per year by 1990
- e. **Length:** 8 hours
- f. **Delivery Timetable:** Starting in late 1983
- g. **Delivery Methodology:** Home study, self study, videotape or film
- h. **Development Costs:** \$1,700 film/site; \$45 per student

1306. COURSE TYPE: ADP Application Training

- a. **Purpose:** To provide the user organizations with the knowledge and skills needed to support and interface with an ADP application. The training requirements will be established and scheduled by the development project manager. A specific user's guide and related training will be tailored to fit the specific application need.
- b. **Audience:** Functional user organization employees throughout FAA
- c. **Total Number of Students That Should Have the Course:** 10,000
- d. **Estimated Annual Number Trained:** 5000 per year for the first years; 2500 per year by 1990
- e. **Length:** 5 days
- f. **Delivery Timetable:** As scheduled in conjunction with an application development schedule.
- g. **Delivery Methodology:** On-site hands-on
- h. **Development Costs:** Part of application development cost, in-house or contract

1305. COURSE TYPE: Information Resources Management Training for Managers

- a. **Purpose:** To provide managers and supervisors at every level in FAA with an understanding of the scope and significance of the agency's information resources and the responsibilities, systems, and techniques that are employed in managing and using these resources. Management philosophy, functional development, and hardware/software design concepts will be introduced. In some cases this will be supplemented with more extensive information on planning, organizing, and controlling information activities and projects.
- b. **Audience:** Managers and supervisors throughout FAA
- c. **Total Number of Students That Should Have the Course:** 2,500
- d. **Estimated Annual Number Trained:** 500
- e. **Length:** 1 day average
- f. **Delivery Timetable:** Starting in late 1983
- g. **Delivery Methodology:** As component of MTS training or on-site training
- h. **Development Costs:** \$15,000

1307. COURSE TYPE: ADP Technical Training

- a. **Purpose:** To maintain state-of-the-art technical expertise for efficient development and maintenance of the agency's information resources. This training will encompass many technical courses, i.e., specific vendor hardware, data base management and operating systems, and communications.
- b. **Audience:** ADP technical staff—system analysts, programmers, operators
- c. **Total Number of Students That Should Have the Course:** 200
- d. **Estimated Annual Number Trained:** 200; 2 courses annually
- e. **Length:** 5 days
- f. **Delivery Timetable:** In conjunction with vendor hardware/software installation or change
- g. **Delivery Methodology:** On site, hands-on, classroom
- h. **Development Costs:** Included in basic acquisition contract

1308. COURSE TYPE: Decision Support Systems for Management and Staff

a. Purpose: To achieve optimum utilization of the agency's information resources in support of management decisions. Functionally responsible management and staff people will need to learn techniques for extracting summary data, applying statistical, simulation, and modeling techniques, and various graphic presentation techniques.

b. Audience: Management and staff personnel in Washington, centers, and regional offices

c. Total Number of Students That Should Have the Course: 2,500

d. Estimated Annual Number Trained: 500 per year for the first years; 100 per year by 1988

e. Length: 5 - 10 days

f. Delivery Timetable: Initial classes in 1984

g. Delivery Methodology: On-site hands-on, MTS, local educational institutions

h. Development Costs: \$150,000 by contract

Appendices

APPENDIX 1. LIST OF MANAGEMENT STEERING COMMITTEE AND WORK GROUP PARTICIPANTS

MANAGEMENT STEERING COMMITTEE

J. Lynn Helms, Administrator	Raymond J. Van Vuren, Director of the Air Traffic Service
Michael J. Fenello, Deputy Administrator	Brooks C. Goldman, Director of the Office of Management Systems
A. P. Albrecht, Associate Administrator for Development and Logistics	Benjamin Demps, Jr., Director of the Mike Monroney Aeronautical Center
Walter S. Luffsey, Associate Administrator for Aviation Standards.	C. R. Melugin, Jr., Director of the Southwest Region
Donald R. Segner, Associate Administrator for Policy and International Aviation	Robert E. Whittington, Director of the New England Region
William F. Shea, Associate Administrator for Airports	
Charles E. Weithoner, Associate Administrator for Administration	

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Tony Amato, APT	Ray Corley, AAC	Sandy Frederick, AAL
Joe Anderson, ALG	Harry Cornelison, AMA	Rita Freeman, AMS
Larry Andriesen, ASW	Nathan Craig, AAC	Jerry Froelke, ABU
Dick Angle, AAA	Rick L. Cremer, AFO	Joyce Gant, AFO
Alan Armstrong, APT	Fred W. Crenshaw, AWS	Ruble Garner, AAC
Carol Arnold, ALR	Jim Crowling, AAT	Don Garrett, AAT
Beau Bancroft, AAT	Dave Custis, AVS	Bill Gieck, AAA
Pat Beardsley, AMS	Jim Dargue, AAT	Wrensey Gill, APP
Al Behrman, ALG	Tom Davidson, AMS	Ken Goldfarb, ABU
Avalon Bergheim, AVS	Joe Demeo, AAP	George Gordon, ACR
Melissa Berry, AAL	Lillian Dickerson, ABU	Ron Gordon, AMS
Clyde Bingman, AMA	John Dickover, ANM	Chuck Hale, ASW
Vicki Bland, AAT	Barbara Disharoon, AAT	Tom Hammans, AES
Millard Bohler, AMS	Ray Donnelly, AMS	Don Hansen, AAA
Tim Booth, AAT	Bill Dougherty, APM	Harold Hanson, APM
Charles Booze, AAC	Gloria Douglas, APT	Marlene Hardester, APT
Fred Botz, ABU	Jim Doyle, AAT	Dick Harris, AAD
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Steve Hopkins, AMS
John Hospital, AMS
Jim Hughes, AAL
Max Hupfer, APT
Gene Ines, AVS
Margo Inskeep, AMS
Jim Jerman, ACS
Dave Johnson, AES
Don Johnson, ACT
Milton Johnson, ASO
Arthur C. Jones, AFO
Emily Jones, ALR
Janet Jones, AFO
Lloyd Jones, APM
Harvey Kaplan, AMS
Peggy Kenan, APT
Charlie Kent, ABU
Nobi Koop, AAA
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Dr. Dixon Lackey, ASO
Bert Lacroix, AMS
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John Larsen, ASO
Fay Lauver, AAL
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Ruth Leverenz, AMS
Ginger Levin, API
Mark Lewis, AAC
Marty Lynn, AAT
Earl Mahoney, AAC

Era Marshall, ACR
Angelo Mastrullo, AWS
George McKnight, AAT
Mary McLaughlin, APT
Jane Mehrtens, ARP
Gene Mercer, APO
Hal Metcalf, AMA
Dave Micklin, ACR
Lillie Morant, ARP
Larry Morphus, AAC
Jim Mottley, APP
Fred Mozingo, AAA
Frank Munroe, ACT
Bill Murphy, ASO
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Dick Nowak, AWS
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Alice Payne, AVS
Paul Peterson, ABU
Fred Phillips, APT
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Bill Riffe, ABU
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Angie Sebastian, ARP
Lloyd Shaw, ASO
Audrey Simmons, ACR
Gene Slyman, AAD
Lindale Smith, AWP
Terry Snyder, AMA
Nick Soldo, AMS
Bill Southerland, AAS
Frank Sperry, AMS
Tom Stanley, ASO
Joe Stevens, AMS
Ralph Straley, AMS
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Tom Thompson, APM
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John Turner, AAC
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Alan Van Druenter, AAC
Peter Verdin, AAA
Miles Walbrecht, ADL
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Roger Westberg, APO
Ron Weston, AAA
George Williams, AAA
Carlton Wine, APO
Bob Woods, AMS
Denise Yorkshire, ABU

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Greg Haugan, TSC
Catherine Ruskie, IOCS

Pete Segola, TSC
Felix Spagnola, GSA
Diane Sparkman, IOCS

Karen Veasley, IOCS
Robert Wiseman, TSC

APPENDIX 2. ORGANIZATIONS OUTSIDE FAA THAT WERE CONSULTED DURING IRMP DEVELOPMENT

INDUSTRY CONTACTS

Aetna Life Insurance
Alexander & Alexander Accountants, Inc.
American Express
Applicon
Bank of America
Bendix
Boeing
Calcomp
Chrysler Corporation
Citibank
Coldwell Banker
Computervision
Data General
Delta Airlines
Dobbs House, Inc.
Exxon
Fireman's Fund Risk Management Services
Florida Power and Light
General Electric
General Mills
General Motors
Georgia-Pacific Corporation
Hewlett-Packard
Inmont
International Brotherhood of Electrical Workers
International Business Machines
J. M. Huber
Jewell Foods
Labor Relations Press
Lockheed of Georgia
Management Science America
Marriott
Martin-Marietta
McAuto
McDonnell-Douglas
Mingledorff, Inc.
Mitre
Mobil Oil
Osco Drugs
Phillips Petroleum
Prudential Insurance
Rockwell International
Ryder Trucks

STSC Inc./MTSC Inc.
Security Pacific Bank
Southern Bell Telephone
TRW
United Airlines
Vydor Corporation
Westinghouse
Xerox

GOVERNMENT CONTACTS

City of Baltimore
Defense Logistics Agency
Department of Agriculture
Department of Commerce
Department of Labor
Department of the Air Force
Department of the Army
Department of the Navy
Federal Bureau of Investigation
Immigration & Naturalization
NASA
Office of Personnel Management
Office of the Secretary of Transportation
Social Security Administration
State of California
State of Georgia
State of Maryland
Tennessee Valley Authority
U.S. Postal Service
Veterans Administration

ACADEMIC CONTACTS

Babson
Cornell
George Washington
Georgetown
Harvard
Illinois
Maryland
Michigan
Northwestern
University System of Georgia
Wisconsin

APPENDIX 3. COSTS/BENEFITS BACKGROUND

For Chapters 3 through 11 of this plan, all costs and benefits were determined by the functional information areas' specific work groups. Each work group had an ADP professional assigned to assist in costing/sizing of each proposed project.

To determine developmental costs, the following four areas were costed for FTE functional employees (clerical, GS-5; low-tech, GS-7; high-tech, GS-9; and professional, GS-13) and for ADP support.

1. requirements analysis
2. system specifications
3. programming/testing
4. implementation/conversion

A fifth area was also costed—special ADP cost which included timesharing CPU usage, special software, and other (which was specified). These costs were documented on the IRMP Developmental Cost Collection Form (Figure 3A.1).

The dollar amounts were derived from applying OMB Circular A-76, Contracting of Commercial/Industrial Activities, transmittal 4, and OMB Cost Comparison Handbook (March 1979) to functional employee types. The ADP cost was derived from surveying existing FAA contracts, other vendors, and GSA to strike an average.

Each group also identified benefits/savings. These were documented on the IRMP Operating Cost Collection Form I (Figure 3A.2). By specifying current costs, and what future costs would be with implementation of the proposed project, savings could be identified (both positive and negative). The categories utilized were direct personnel FTE's, indirect personnel FTE's, contracts, equipment/communications/supplies cost, and other specified costs. The same OMB costing criteria were used. On each collection form (project), the groups specified the year cost/savings were to occur with the percentage which would occur in that year.

Other cost factors given to each group were:

- 1) Annual ADP system maintenance
 - Standard system—10% of development cost
 - Large system (e.g., UAS/PMIS/UPS)—25% of development cost
- 2) Computer utilization cost (includes all peripherals)
 - IBM 3081—\$2,000 per hour
 - DG MV/8000—\$500 per hour

Terminals and telecommunications support were assumed present for each project's requirements except for special use terminals (e.g., graphics, CBI).

These data were then input into an automated spread sheet model. This model, using SSI*Calc software, calculated all costs and benefits project by project, year by year to the year 2000. OMB Circular A-94, Discount Rates To Be Used in Evaluating Time-distributed Costs and Benefits, 10% discount table was built into the model to reflect discounted dollar amounts year by year to the year 2000. Any increase in annual ADP operating cost for each project was netted out of that year's savings on a year by year basis.

All projects within a functional area were summarized by the model to produce summary costs/benefits, undiscounted and discounted over time.

These computed results were then given to the work groups to use in their IRMP presentations to the Management Steering Committee, on both a project basis as well as a summary level basis.

The basis for costing in Chapter 12, Information Flow and Processing is found in the Study in Support of the Information Resource Management Plan, dated June 15, 1983, prepared by Wilson-Hill Associates under Contract No: DTFA01-83-Y-30511, Work Order 12.

The major assumptions used in this study follow:

1. Applications Systems/Workload

a. Only automated management information systems were considered. Real time operational systems (e.g., air traffic control) and manual processing were not considered.

b. Data gathered for existing management information systems included "in-house" application systems and timesharing applications.

c. To allow for errors in data gathering of existing systems and future information requirements, 10% workload variance was used for the baseline and 25% for future systems workload.

d. The current and future requirements for office automation, electronic mail, computer based instruction (CBI), and national word processing are not included in mainframe sizing.

e. The future requirements (which include new systems and replacements of/additions to existing systems) in combination with the baseline application systems and timesharing applications constitute the total FAA future information requirements from 1983 through 2000.

f. The future workload for the NAS Facilities Information System (NFIS), the Maintenance Management System, and the Regional Project and Management System will be split between the Data General computers (1/2) and the Tandem computers (1/2). The Tandem computers are not included in the sizing.

g. The 1985 workload was arrived at by:

1) Existing system workload data as of 10/01/82
2) 10/01/82 workload requirements (both processing and I/O) was increased 10% per year to get 1985 workload.

3) In addition to the above, any new requirements identified for 1983 through 1985 were included.

h. The 1985-2000 workload was arrived at by increasing 10% per year from the baseline workload. Any new systems have their workload increased 10% per year beginning with the year after implementation.

i. Future disk requirements are increased by per cent specified in the requirements. If not specified, 10% was used.

j. Timesharing applications brought in-house will increase as other baseline applications—10% per year.

k. Telecommunications workload will increase 10% per year from 1985 through 2000.

2. Hardware/Telecommunications/System Utilization

a. The PDP, VAX, and HP equipment at Oklahoma City supporting radar training and CAMI were not considered as resources as they are single purpose usage machines.

b. The Honeywell 60/66 at the Technical Center (ACT) was not included in the baseline hardware configuration.

c. The ADCN is part of the existing baseline telecommunications network.

d. The Transportation Systems Center (TSC) was not considered as part of the existing hardware baseline but was considered as part of the telecommunications baseline. Existing applications utilizing TSC were included in the 10% miscellaneous local applications category.

e. Standard hardware configuration, FAA defined, where Data Generals exist is:

"Eclipse Series"

Each system has dual MV 8000 CPU's

Each CPU has 3 megabytes of memory

6 disks—200 megabytes each

2—1200 line per minute printers

4—800/1600 BPI tapes

CPU's are loosely coupled

Each CPU can handle 128 terminals

Each CPU can handle 256 tasks concurrently

The number of CRT terminals depends on application requirements—minimum 35 CRT's connected to each Data General System.

f. All computer and telecommunications hardware will be replaced at the beginning of 1991 and 1999 based on FAA's 8 year life cycle. Hardware upgrades within the 8 year life cycle will use compatible hardware and software as required to satisfy capacity requirements.

g. 10% of CPU capacity will be reserved for miscellaneous local applications.

h. Operating system overhead was sized at 30% of total utilization.

i. Any development, implementation, testing, maintenance, and enhancements of/to national/local systems in excess of current CPU utilization will utilize contractor computer resources.

j. Duality must exist for all CPU's.

k. FAA requires 2-second response time.

l. For pricing consistency, any computer and telecommunications hardware, terminals and peripherals required will be purchased, not leased.

m. All communications lines will be leased.

n. For purposes of determining future telecommunication workload requirements for field facilities, the Southwest Region was utilized as a representative FAA region.

o. For 1983 to 1990, the only alternative considered is the existing hardware / telecommunications configuration.

3. Costing

a. As of fiscal year 1985, all computer operational requirements will be satisfied and costed using a facilities management approach, managed by a contractor.

b. FAA will rely heavily on contractors and or vendors to perform application design, development, implementation, testing, software related training, documentation, and program modifications and enhancements.

c. The following percentages were used for costing:

1) Hardware, system software, telecommunication hardware and leased lines—no inflation, used 1983 dollars.

2) Maintenance of above—11% of purchase price.

3) Operational personnel salaries—5% annual increase.

4) Salvage/residual value—10% of purchase price.

5) Additional system software—10% annualized to cover additional procurements.

d. OMB A-94 10% discount table was used.

4. Telecommunications

a. Sufficient ports and circuitry must be provided to allow 75% of FAA's interactive user population the capability of simultaneous connection with their computers.

b. Shift in each day's computer workload will occur in 1985 through 1990 (70% prime time to 90% prime time).

c. Network is designed to handle peak loads.

d. Current and projected baseline traffic load will be processed at the Aeronautical Center through the year 2000.

e. FAA has a requirement to ensure continuing telecommunications services.

For Chapter 13, Human Interface and Training, an internal Management Systems work group was established which interfaced with the Office of Personnel and Training (APT). This work group established the generic training required for the implementation of this plan. Course development, number of trainees, and training delivery were the basis for costs. No attempt was made to quantify savings.

IRMP DEVELOPMENTAL COST COLLECTION FORM

3/8/83

Project Title:Developmental Cost (includes workyears, equipment, communications, supplies, etc.):(1) Requirements Analyses, (includes studies, etc.):(a) Functional:

Clerical: _____ Wkys x \$24K/Wkyr = \$ _____

Low-Tech: _____ Wkys x \$26K/Wkyr = \$ _____

Hi-Tech : _____ Wkys x \$36K/Wkyr = \$ _____

Prof. : _____ Wkys x \$62K/Wkyr = \$ _____

(b) ADP: _____ Wkys x \$95K/Wkyr = \$ _____

(2) System Specifications:(a) Functional:

Clerical: _____ Wkys x \$24K/Wkyr = \$ _____

Low-Tech: _____ Wkys x \$26K/Wkyr = \$ _____

Hi-Tech : _____ Wkys x \$36K/Wkyr = \$ _____

Prof. : _____ Wkys x \$62K/Wkyr = \$ _____

(b) ADP: _____ Wkys x \$95K/Wkyr = \$ _____

(3) Programming/Testing:(a) Functional:

Clerical: _____ Wkys x \$24K/Wkyr = \$ _____

Low-Tech: _____ Wkys x \$26K/Wkyr = \$ _____

Hi-Tech : _____ Wkys x \$36K/Wkyr = \$ _____

Prof. : _____ Wkys x \$62K/Wkyr = \$ _____

(b) ADP: _____ Wkys x \$95K/Wkyr = \$ _____

(4) Implementation/Conversion:(a) Functional:

Clerical: _____ Wkys x \$24K/Wkyr = \$ _____

Low-Tech: _____ Wkys x \$26K/Wkyr = \$ _____

Hi-Tech : _____ Wkys x \$36K/Wkyr = \$ _____

Prof. : _____ Wkys x \$62K/Wkyr = \$ _____

(b) ADP: _____ Wkys x \$95K/Wkyr = \$ _____

(5) Special ADP Cost:

(a) Time Sharing : \$ _____

(b) CPU Usage : \$ _____

(c) Special Software: \$ _____

(d) Other (Specify) : \$ _____

Developmental Schedule/Cost Distribution

Schedule (Enter all years)

Start yr _____

Cost Distribution: Percentage in each year

Total Clerical: _____ Wkys\$

Total Low-Tech: _____ Wkys \$

Total High-Tech: _____ Wkys \$

Total Prof _____ Wkys \$

Total ADP _____ Wkys \$

Special ADP cost \$

Total Development Cost: \$ _____

FIGURE 3A.1

3/8/83

IRMP OPERATING COST COLLECTION FORM IProject Title:Annual Operating Cost.

FAA Personnel: Current - Future = Savings

Direct:

Clerical: __ Wkys	Wkys	Wkys	x \$24K = \$ _____
Low-Tech: __ Wkys	Wkys	Wkys	x \$26K = \$ _____
Hi-Tech : __ Wkys	Wkys	Wkys	x \$36K = \$ _____
Prof. : __ Wkys	Wkys	Wkys	x \$62K = \$ _____

Indirect:

Clerical __ Wkys	Wkys	Wkys	x \$24K = \$ _____
Low-Tech: __ Wkys	Wkys	Wkys	x \$26K = \$ _____
Hi-Tech : __ Wkys	Wkys	Wkys	x \$36K = \$ _____
Prof. : __ Wkys	Wkys	Wkys	x \$62K = \$ _____

Functional Contract.\$	Cont \$	Net Cont \$
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Equipment/Comm/ Supplies Cost \$	Cost \$	Net Cost \$
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Other Cost (Specify) \$	Other \$	Net Other \$
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What year will savings be realized? If savings will be realized incrementally show percentage of total in each year up to 100% in final year.

Year	____%	Year	____%	Year	____%	Year	____%
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FIGURE 3A.2

Appendix 4. LIST OF ACRONYMS AND ABBREVIATIONS

AAA	Office of Accounting	ASW	Southwest Region
AAC	Mike Monroney Aeronautical Center	ATAS	Air Transportation Analysis System
AAD	Associate Administrator for Administration	ATC	Air Traffic Control
AAL	Alaska Region	AUSDS	Automated Utilization Screening Disposal System
AAM	Office of Aviation Medicine	AVN	Aviation Standards National Field Office
AAP	Advanced Automation Program Office	AVS	Associate Administrator for Aviation Standards
AAS	Office of Airport Standards	AWS	Office of Airworthiness
AAT	Air Traffic Service	CAB	Civil Aeronautics Board
ABU	Office of Budget	CAIS	Comprehensive Airway Information System
ACR	Office of Civil Rights	CBI	Computer Based Instruction
ACS	Office of Civil Aviation Security	CFR	Code of Federal Regulations
ACT	Technical Center	CNS	Consolidated NOTAM System
ADAP	Airport Development Aid Program	CPMIS	Consolidated Personnel Management Information System
ADCN	Administrative Data Communications Network	CPU	Central Processing Unit
ADL	Office of Development and Logistics	CR/EEO	Civil Rights and Equal Employment Opportunity
ADO	Airport District Office	CRT	Cathode Ray Tube
ADP	Automated Data Processing	DBMS	Data Base Management System
AES	Activity and Environment System	DG	Data General
AFO	Office of Flight Operations	DMAAC	Defense Mapping and Aeronautical Charting
AGL	Great Lakes Region	DOE	Department of Energy
AIDS	Accident/Incident Data System	DOT/OST	Department of Transportation/Office of the Secretary
AIP	Airport Improvement Program	EDCS	Engineering Drawing Catalog System
AIS	Aeronautical Information System	EIS	Enforcement Information System
ALG	Acquisition and Materiel Service	F & E	Facilities and Equipment
ALR	Office of Labor Relations	FAA	Federal Aviation Administration
AMA	Metropolitan Washington Airports	FAR	Federal Aviation Regulations
AMIS	Aircraft Management Information System	FERS	Facilities and Equipment Physical Status Reporting System File
AMS	Office of Management Systems	FIPS	Federal Information Processing Standards
ANE	New England Region	FOF	Field Office/Facility
ANM	Northwest Mountain Region	FOM	Field Office Modernization
AOS	Agency Operations System	FSNFO	Field Standards National Field Office
API	Office of Policy and International Aviation	GAO	Government Accounting Office
APM	Program Engineering and Maintenance Service	GHO	Graphics Handling Option
APO	Office of Aviation Policy and Plans	GSA	General Services Administration
APP	Office of Airport Planning and Programming	HIS	Health Information System
APT	Office of Personnel and Training	IAPA	Instrument Approach Procedures Automation
ARP	Associate Administrator for Airports	ICAO	International Civil Aviation Organization
ARTCC	Air Route Traffic Control Center		
ARTS	Automated Radar Terminal System		
ASAS	Aviation Safety Analysis System		
ASF	Office of Aviation Safety		
ASO	Southern Region		
ASRS	Aviation Safety Reporting System		

Information Resources Management Plan

IMS	Information Management System	OMB	Office of Management and Budget
IOCS	Input/Output Computer Service	OPR	Office of Primary Responsibility
IPE	Information Processing Equipment	PGP	Planning Grant Program
ISWG	Interservice Working Group	PMIS	Personnel Management Information System
LIS	Logistics and Inventory System	PMS	Program Management System
LMIS	Loss Management Information System	PPIMS	Personal Property In-Use Management System
MAS	Medical Accident System	RCAG/VOR	Remote Center Air/Ground—VHF Omnidirectional Range
MBE	Minority Business Enterprise	RML	Radar Microwave Link
MIS	Management Information System	RMMS	Remote Maintenance Monitoring System
MMS	Maintenance Management System	SAFI	Semi-Automatic Flight Inspection
MPP	Merit Promotion Program	SDR	Service Difficulty Reporting System
MWA	Metropolitan Washington Airports	SMIS	Safety Management Information System
NADIN	National Data Interchange Network	TCC	Transportation Computer Center
NAS	National Airspace System	TERPS	Terminal Instrument Procedures
NASA	National Air and Space Administration	TMS	Telecommunications Management System
NFDC	National Flight Data Center	TSC	Transportation Systems Center
NFIS	NAS Facilities Information System	UAS	Uniform Accounting System
NOTAM	Notice to Airmen	UCR	Unsatisfactory Condition Report
NPIAS	National Plan for Integrated Airports Systems	UPS	Uniform Payroll System
NMAC	Near Mid-Air Collision System	WCIS	Worker's Compensation Information System
NPRM	Notice of Proposed Rulemaking		
NTSB	National Transportation Safety Board		
OE & AAA	Obstruction Evaluation and Airport Airspace Analysis		
OJT	On-the-Job Training		

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